DOCUMENT RESUME

ED 046 509 PS 004 064

AUTHOR Williams, Charles Ray
TITLE A Comparison of Contrasting Programs in Early Childhood Education.
INSTITUTION California Univ., Los Angeles.
PUB DATE 70
NOTE 128p.

EDRS PRICE EDRS Price MF-$0.65 HC-$6.58
DESCRIPTORS *Academic Performance, Classroom Observation Techniques, Classroom Techniques, *Comparative Analysis, Conventional Instruction, *Early Childhood Education, Educational Programs, Individualized Programs, *Kindergarten, Measurement Instruments, Performance Factors, *Program Evaluation, Research Methodology, Student Teacher Ratio, Teacher Role

ABSTRACT

This study compares the performance of pupils in the individualized early childhood program at the University of California at Los Angeles Elementary School with that of kindergarten pupils in the more conventional program of the Los Angeles City Schools. Programs of both institutions are analyzed and relationships between schocl program and student performance are noted. To assess pupil performance, three tests based on precise educational objectives from three curricular areas (self-related skills, reading readiness, and social skills) were administered to a total of 69 5-year-olds. To compare the programs of both institutions, a set of observational categories guided description of activities for 21 classrooms. Statistical evidence indicates that performance of pupils in the University School program was significantly (.01) higher for all three curricular areas. An analysis of the classroom observations reveals a number of areas of gross difference between the two programs which appear to be related to differences found in pupil performance. The text of this document provides the study format and four extensive appendixes provide instruments designed to expedite further research into the cause and effect relationships which exist in educational programs. (Author/WY)

U. S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

ED046509

A COMPARISON OF CONTRASTING PROGRAMS IN EARLY CHILDHOOD EDUCATION

A Study Conducted by
Charles Ray Williams

at

University of California, Los Angeles

1970

PS004064

Copyrighted Material

"PERMISSION TO REPRODUCE THIS COPYRIGHTED MATERIAL HAS BEEN GRANTED BY Charles Ray Williams TO ERIC AND ORGANIZATIONS OPERATING UNDER AGREEMENTS WITH THE U.S. OFFICE OF EDUCATION. FURTHER REPRODUCTION OUTSIDE THE ERIC SYSTEM REQUIRES PERMISSION OF THE COPYRIGHT OWNER."

Chapter I

INTRODUCTION AND STATEMENT OF THE PROBLEM

This is the report of a study to compare the effectiveness of an individualized instruction approach and a more conventional approach to reaching specified goals and objectives with five-year-old children. In this study the performance of students in the individualized program of the Early Childhood Unit at University Elementary School, the laboratory elementary school of the University of California, Los Angeles, is compared to the performance of students in the more conventional kindergarten programs of the Los Angeles City School System. Performance is measured in terms of student behavior as it relates to specific objectives derived from three curricular areas: reading readiness skills, social skills, and self-related skills. The programs of both institutions are analyzed and possible relationships between program characteristics and student performance are noted.

The importance of the child's early years and early education has been emphasized for a number of years by such scholars as Hughes (1960), Hymes (1968), Bloom (1964), Hess (1968), and others, yet it is only in recent years that early education has been given broad support by federal agencies, state agencies, and local school districts. As has been the case throughout the history of early childhood education, this broadened support has been stimulated by national crises -- the knowledge explosion, the school drop-out, the disadvantaged child,

students who are not learning to read, and others. This increased emphasis on early education has been accompanied by theories and programs but little empirical evidence to indicate the effectiveness of these programs.

The specific purposes of this study are:

1. The identification and description of differences in some central patterns and practices which characterize the early childhood program at University Elementary School and the kindergarten program of the public school.

2. The identification of differences in performance related to reading readiness skills, social skills, and self-related skills which exist between children completing early childhood at University Elementary School and those completing kindergarten in the public schools.

3. The identification, analysis, and interpretation of relationships which exist between the observed differences in student performance found in (2) above and the program differences found in (1) above.

Philosophical Concepts upon Which University Elementary School is Based

The rationale behind the early childhood program at University Elementary School is well defined and is limited to only one school, thus enabling the writer to easily describe the philosophical concepts upon which the program is based. Since the rationale for the kindergarten program in the Los Angeles City Schools is not so clearly

defined and is comprised of many classrooms in many different schools, any description of the program or its rationale can only be done by actually observing what is happening in the classroom. Thus, all descriptions of the kindergarten program or the rationale upon which it is based will appear later in the study.

Early childhood education at University Elementary School is based on the notion that the child must be helped to feel good about himself, to feel comfortable with himself, to feel and to have the confidence that he is worth something. To achieve this strong self-concept, the program at University Elementary School is designed to meet the needs of the individual student. Thus, the structure of the school is based on phases of two or more years, each of which is defined in terms of specific goals and objectives which are felt to be necessary to the development of a strong self-concept. The early childhood phase of schooling includes children who range in age from three to six years. This age range allows the student to choose from many alternatives, such as selecting a younger peer group while working with a very skilled reading group or with a group of children who have low physical skills.

This early childhood phase of schooling is based on the assumption that the development of a strong self-concept for the child between the ages of three and six is dependent on the skills he possesses in five areas termed "relationships." These are:

1. Relationship to self -- The student's ability to care for his own personal needs and his ability to move his own body in space.

2. Relationship to individual peers -- The student's ability to interact with another child.
3. Relationship to adults -- The student's ability to seek help from an adult, relate to an adult, and function without dependence on an adult.
4. Relationship to the peer group -- The student's ability to participate as a member of a group -- to share time, space, and ideas as well as to demand his portion of time and space.
5. Relationship to materials and ideas -- The student's awareness of and ability to make productive use of a wide variety of materials, equipment, and ideas.

Each of these areas is defined in terms of specific objectives which are critical and possible for every child by the time he completes the early childhood phase of schooling. These skills do not represent all that the student will reach but a minimal level beyond which the child is encouraged to go as far as he is able. These areas are used to determine the curricular stress, for evaluating student needs, and for prescribing the instructional activities needed.

Another characteristic of the school which is instrumental in providing for the individual differences of students is that of team teaching -- a structure in which two or more teachers plan together and work together in teaching a single group of students. This structure provides alternatives for the student in terms of the adults with whom he can function best at any given time; it also provides a larger group of students from which to choose his peer

group. The teacher is also afforded more alternatives in terms of the students with whom he can work best and the curricular areas with which he feels most comfortable. This structure also provides the teachers the opportunity to upgrade their teaching skills by the influence they have on each other. In the early childhood unit the teams are usually made up of two or three teachers with from thirty-five to forty-five students.

The criteria for placement of children once again emphasizes the needs of the individual. A child is placed with the peer group which is best suited for him and the teachers with whom he can work most productively. A child may be placed with another child with whom he works well or with a peer group which will challenge him. He may be placed with a teacher who is demanding or one who is warm and nurturing and so forth.

The teacher's role is primarily one of assessing present skills and diagnosing the skills needed by the child, prescribing educational objectives and teacher behaviors best suited to the child's needs, providing an environment which is designed to reach these ends and means, and then acting primarily as a facilitator of learning (facilitating the child's interaction with his environment) rather than a giver of information.

The child's ability to become an individual who can think for himself requires an environment in which he has the opportunity for confrontation and the necessity to make choices. Thus, the Early Childhood Program at University Elementary School places maximum emphasis on independent learning activities where the student must

PS 004064

take the responsibility for making a choice and for completing a task rather than functioning in a larger group where most of the decisions are made by the teacher. Rules are limited to those which are necessary for the safety of students but do not eliminate confrontations in which the child must make a decision.

Each concept and part of the University Elementary School program does not function alone but all parts are interrelated and considered necessary to the development of a strong self-concept.

An Outline of the Study

The study was conducted in two parts. The first is comprised of the evaluation and comparison of student performance. The second portion deals with a description and comparison of the kindergarten programs of the selected public schools and the early childhood program at University Elementary School.

The student samples include a total of sixty-nine five-year-old children. The University Elementary School sample is made up of forty-three students who have completed at least two years of full time schooling, at least one of which was in the early childhood unit at University Elementary School. The public school sample includes twenty-six children who have completed at least two years of full time schooling, one of which was public school kindergarten. Children in the public school sample have previously applied for admission to University Elementary School and their names now appear on a waiting list for possible admission to the program.

The programs described and compared are those of the Early Childhood Unit at University Elementary School and the kindergarten program of selected schools in the Los Angeles City School District from which the public school sample of children came.

The format for the first portion of the study is a modification of that described by James Popham (1969) in "Program Fair Evaluation." This is a design by which to compare two programs having different objectives. This design involves the choosing of areas which are common to both programs and on which emphasis does not seem to favor either program. The second part of the design involves choosing the areas of each program which are common to both programs and on which student performance is expected to favor that program. Thus, the curricular areas chosen for this study are: reading readiness skills, self-related skills, and social skills. The first, reading readiness skills, is chosen because of the heavy emphasis given to it in the kindergarten curriculum guides of the Los Angeles City Schools and the lack of emphasis given to it by the guides and publications of the Early Childhood Unit of University Elementary School. Thus, student performance can be expected to favor the public school sample. The second area, self-related skills, is chosen because of the heavy emphasis given to it in guides and publications of the Early Childhood Unit at University Elementary School and the lack of emphasis in the kindergarten curriculum guides of the Los Angeles City Schools. Thus, student performance can be expected to favor the University Elementary School sample. The third area, social skills, is chosen because of its heavy emphasis in the guides

and publications of both the public school sample and the University Elementary School sample. Thus student performance can be expected to favor neither sample.

Each of the chosen curricular areas is then defined in terms of specific behavioral objectives which were checked for content validity by judges representing the program which stressed that area. A copy of the objectives for each area appear in Appendix I of this study.

Criterion items were developed to test the child's performance related to each objective. Each of these items was checked for content validity by three judges. These items were then organized into three instruments for testing and observing student performance. A copy of all three instruments is included in Appendix II of this study.

Two observers were hired and trained to work with instrument "A". This training included discussion and study of observational techniques as outlined in Medley and Mitzel (1963), a careful study and analysis of each criterion item, and practice sessions involving children not included in the study. For instruments "B" and "C", the same training process was used but both were administered by only one of the observers.

The first portion of the observations was conducted at University Elementary School in late July and early August, 1969, during a summer session which included members of both the University Elementary School sample and the public school sample. The observations were concluded in late September and early October, 1969, during

the regular session at University Elementary School which included only members of the University Elementary School sample.

The format of the second part of the study, involving a description of the programs of the public school kindergartens and the early childhood program at University Elementary School, is a modification of that used in the Study of Childhood Schooling which is reported in Behind The Classroom Door by John Goodlad (1970).

A series of observational categories (Table I) was formulated to guide the observations to be made in the various classrooms. Fourteen kindergarten classrooms were visited for an entire session (150 minutes) by the writer of this study. An anecdotal record was kept during each visit. The observational categories were then expanded into a checklist which was used to organize the data and make a comparison possible. A copy of the specific categories is included in Appendix III.

The data collected in the first portion of the study are treated statistically and analyzed in terms of whole areas -- reading readiness, social skills, and self-related skills; in terms of sub-areas -- phonetic analysis skills, oral language skills, aggressive behavior, and so forth; and in terms of individual criterion items. The data related to describing and comparing the school programs are analyzed in a similar manner. The findings of both portions are studied in terms of possible relationships which exist between them -- which characteristics of the various programs might have contributed to the differences in student performance and why.

Finally, the study is discussed in terms of its possible

TABLE I

Major Curricular Areas and Sub-Areas

I. Reading Readiness Skills

A. Auditory discrimination

B. Visual discrimination

C. Fine motor skills

D. Oral vocabulary skills

E. Mechanical skills

F. Recall and comprehension

G. Attitude toward language related activities

II. Social Skills

A. Works and plays on a cooperative level with another child.

B. Utilizes adults as sources of information, support, guidance, and control.

C. Participates as a member of the total group.

III. Self-Related Skills

A. Evidences independence in caring for his own physical needs and responsibilities.

B. Evidences independence in relating to other persons.

C. Evidences an awareness of his own body and its functions in the social and physical world.

D. Evidences an awareness of his feelings. Can accept them, control them, and express them in appropriate ways.

significance to early childhood education in general, to the Early Childhood Program at University Elementary School, and to the need for further research.

The remainder of the study discussed in this chapter will be organized as follows:

Chapter I presents an introduction and statement of the problem, an outline of the study, and a description of the philosophical concepts upon which University Elementary School is based.

Chapter II includes a complete description of the research design and the methods used in conducting the study.

Chapter III presents an analysis of the raw data and provides comparisons for each category in which data have been collected.

Chapter IV presents a review of the findings, suggests relationships among these findings, and attempts possible interpretations and explanations of these findings.

Chapter V, the final chapter, presents possible conclusions which can be reached, possible implications for programs of early childhood education, and concludes with a presentation of some of the relevant questions left unanswered.

Chapter II

DESIGN AND PROCEDURES

This chapter describes the research design and the procedures followed in comparing the performance of students in the individualized early childhood program at University Elementary School with that of kindergarten children in the more conventional program of the Los Angeles City Schools. It is further designed to analyze the programs of both institutions and to suggest possible relationships between differences noted in the school programs and those noted in student performance. Specifically, the hypotheses are:

1. For the curricular area of self-related skills, the performance of students in the University Elementary School program will be significantly higher than for students in the public school kindergarten.

2. For the curricular area of reading readiness skills, the performance of students in the University Elementary School program will be significantly lower than for students in the public school kindergarten.

3. For the curricular area of social skills the performance of students in the University Elementary School program will not be significantly higher or lower than for students in the public school kindergarten.

Education for the five-year-old has existed both in the Los Angeles City Schools and at University Elementary School for nearly

half a century. Yet, only for the early childhood program at University Elementary School has a precise definition been formulated. This definition contains the broad goals of the program and the specific objectives which are necessary to reaching these desired goals. Although a precise definition of the kindergarten program in the Los Angeles City Schools cannot be found, a survey of the activities discussed in the courses of study and study guides prepared by the district provides an idea of some general goals which have evolved over the years. Observation in the classroom and discussion with teachers reveals a high degree of uniformity among kindergarten classrooms -- another factor indicating that through custom and habit the kindergarten program of the Los Angeles City Schools too are defined.

During 1968-69 academic year, the investigator collected study guides, courses of study, and other documents pertaining to the kindergarten program of the Los Angeles City Schools and the early childhood program at University Elementary School. These documents were screened to determine some general curricular areas which were thought to be included in each of the programs. In those documents pertaining to the public school kindergarten (Los Angeles City Schools, 1965, 1967a, 1967b), the general areas receiving the greatest emphasis are those of social skills and pre-reading or reading readiness skills. Another area receiving some emphasis involves physical skills.

Documents describing the early childhood program at University Elementary School (Buchanan, 1967; Patterson, 1965; Rogers, 1966) list

the general curricular areas and specific skills which are to be learned in each of these areas. Heavy emphasis is given to social skills which include the student's relationships with individual peers, his relationship to the peer group, and his relationship to the adults around him. Another area of heavy emphasis is called self-related skills, which includes the student's ability to care for his own personal needs and his ability to move his own body in space (above the ground, into a new area, and so forth). The third area of emphasis involves the student's relationship to the materials, equipment, and ideas around him.

Information taken from the documents of the two institutions was used in developing a set of precise objectives. From these objectives, the writer developed three instruments (described later in this chapter) to determine the performance of students in each program. Because of the differences in the goals of the two institutions, it was necessary to choose a design which was not overweighted toward curricular areas emphasized in only one of the programs -- a phenomenon which could effect student performance and thus bias the study in favor of one program. The design chosen is patterned after one developed by James Popham (1969) to compare two programs having different objectives. This design involves the choosing of areas which are common to both programs and on which emphasis does not seem to favor either program. The second part of the design involves choosing the areas of each program which are common only to that program and on which student performance is expected to favor that program. Thus, the curricular areas chosen for this study are social

skills, which are emphasized heavily in both programs; pre-reading or reading readiness skills, which are emphasized more heavily in the kindergarten program; and self-related skills which are emphasized more heavily in the University Elementary School program.

For each of the chosen curricular areas, the researcher developed sub-areas (Table II) and specific objectives to define it. (A complete list of areas, sub-areas, and objectives is contained in Appendix I.) These objectives were then submitted to judges representing each of the programs for validation. Three teachers from the public school kindergarten were asked to respond as to whether the objectives developed for the curricular areas of pre-reading or reading readiness skills and social skills represent what is being taught by their institution. Three teachers from the University Elementary School program were asked to act as judges and respond as to whether these objectives represented what is being taught by their institutions in the areas of self-related skills and social skills. Any objective not supported by the judges was either deleted or rewritten until it was supported.

The original selection of judges included school administrators. However, the writer soon discovered that whereas a high correlation existed between teachers as to what is being stressed in the classroom, there is little agreement between teachers and administrators. This is assumed to indicate that the administrator is too far removed from the classroom to be fully aware of what is being stressed. Thus, only teachers were selected.

The writer also noted that although the judges chosen to

TABLE II

Classroom Observation

Major Categories and Sub-categories

I. Curriculum Content

A. Sources of curriculum decisions

B. Existence and specificity of aims and objectives.

C. Content areas emphasized

II. Instructional Process

A. Group instruction

B. Independent activities

C. Transition and routine

D. Basis for the selection of learning activities

III. Learning Climate

A. Daily schedule

B. Classroom rules

C. Techniques utilized for student control

D. Degree of teacher involvement

E. Mannerisms of teachers towards children

F. Degree of student involvement

G. Pacing of classroom activities

IV. Physical Environment

A. Classroom facilities

B. Standard classroom furniture and equipment (in the room regardless of the activity)

C. Playground facilities

TABLE II (Continued)

D. Standard playground equipment

V. Student Population

A. School enrollment

B. Class size

C. Class grouping

D. Socio-economic status of school population

E. Age span of student

VI. Staffing

A. Number of early childhood or kindergarten teachers

B. Teaching responsibilities

C. Evidence of cooperative or team teaching

D. Teacher experience

E. Para-professional staff

F. Trainees

represent University Elementary School are skilled in writing and using precise objectives, the kindergarten teachers in the selected schools do not possess these skills. Thus it appears that the judges chosen to represent the public school kindergarten tend to accept the objectives as presented by the researcher. On the basis of this, some question may be raised as to the reliability of these judges to determine what objectives are actually taught in the kindergarten program. This aspect of the study will be treated in more detail in Chapter IV.

For each objective in the three curricular areas, a test item was developed to determine the student's attainment of the objective. These items were then submitted to the same judges for validation in the same manner as were the objectives. Each test item was rewritten until it was considered valid by the judges. Test items were then arranged into three instruments (included in Appendix II). One instrument is an observation schedule which is based on a sign system of observation as described in Medley and Mitzel (1963). This is a system in which many short observations are made on each subject and any behavior listed on the schedule which is seen during the observation is checked only once. After all the observations are completed, a frequency count is made from which the subject's behavior pattern is determined. The second instrument is a criterion-referenced instrument on which each child is tested individually by asking him specific questions or having him perform the actions called for in simple instructions. A subject's performance on these items is scored on a simple yes or no basis and when all subjects have com-

pleted the instrument, a frequency count is made to determine the performance of the total student sample on each item. The third instrument is also a criterion-referenced instrument which is similar to the previously mentioned instrument except that the items included on it are such that they require more physical activity on the part of the subjects and the person administering the test. Scoring on this instrument is done in the same manner as for the previous instrument.

The student samples

The selection of students to be included in this study is limited by the following:

1. Students' dates of birth must fall between December 3, 1963, and December 2, 1964, thus making the students legally eligible to enter first grade in California in September, 1969.

2. Parents must have previously applied for the child's admission to University Elementary School, thus insuring similar socio-economic status and similar aspirations for education on the part of the parents.

3. Students must have completed at least two years of a full time school experience consisting of five days per week and at least two hours per day. The second of these two years, the 1968-69 school year, must have been spent in either the kindergarten program of the Los Angeles City Schools or the early childhood program of University Elementary School. This

limitation is designed to insure some uniformity in the child's educational background.

The University Elementary School sample is comprised of all students in the early childhood program of University Elementary School who meet the above limitations -- a total of forty-three students.

To select the kindergarten sample, the writer obtained the names of the nearly 800 children on the University Elementary School waiting list who met the above limitations. From this list of names, eighty children were selected at random and each of these was invited to attend the 1969 summer session at University Elementary School. The twenty-seven students from this random sample who did attend the 1969 summer session became the kindergarten sample.

Although all students included in both the experimental and control samples attended school prior to September, 1969, the findings and interpretations of this study are limited to the school experiences encountered by the students during the 1968-69 academic year. It is reasonable to consider that these prior school experiences may have some effect on the student's present performance. However, it is the belief of the writer that consideration of the large number and diversity of these prior school experiences broadens the scope of the study beyond what is manageable at this time. Therefore, the importance of the prior school experience is acknowledged and this variable controlled by assuring that every student has completed two years of a full time school experience. No attempt is made to describe or differentiate between any school experiences

prior to the 1968-69 school year.

Two observers were selected to observe and test all students included in this study using the three instruments described earlier in this chapter. One observer selected (Observer A) is a housewife and mother of two children who has had experience working with young children as a kindergarten helper and a Sunday School teacher. The other observer (Observer B) is a housewife and mother of a small child. She is trained as an elementary teacher and has previously taught third grade for a short time in the schools of the Los Angeles City School System.

The purpose and design of the study was explained to the observers. Each item on the observation schedule was presented to, and discussed with, each observer until it appeared to be fully understood and until the observer could locate each item rapidly on the schedule. Observations were then made on six students not involved in the study and these observations were discussed to ascertain and correct any problems or confusion which became apparent. The two criterion item instruments were presented to and discussed with Observer A who conducted this portion of the study. These criterion item instruments were also tested on six children not included in the study and the results discussed to determine problems or confusion which might be encountered.

The observations and testing of students were conducted in July and August, 1969, during the University Elementary School summer session and again in September and October, 1969, during the regular school session at University Elementary School. All observations

and testing of students in the kindergarten sample and on ten students in the University Elementary School sample were completed during the summer session. Other students in the University Elementary School sample were observed and tested during the regular school session.

A series of twelve, three-minute observations were made on each student by each observer. Thus, each child was observed for a total of seventy-two minutes. Observations were made over a period of days and during different parts of the daily program to insure obtaining a valid picture of the student's behavior. Whenever possible, care was taken that the observers were not aware of which sample a child was from. During each three-minute observation, the observer checked any behavior listed on the instrument which she saw exhibited by the child. A separate instrument was used for each student.

The second instrument to be used is the first criterion-referenced test which was administered to each student by Observer A. For this test, each student was taken to a small office near the main classroom where he was asked to answer questions or to perform simple tasks. The observer put a check by those questions which were answered correctly or those tasks which were performed properly. The time required for this instrument ranged from twenty to thirty minutes for each student.

The last instrument to be used is the second criterion-referenced test which was also administered to each student by Observer A. For this test, each student was taken to the playground

area adjacent to the classroom where he was asked to perform simple tasks which are called for in the instrument. The observer then placed a check to signify those tasks which were satisfactorily completed by the student.

Following completion of the observations and tests, the researcher determined the mean or average scores for each student sample on each of the three curricular areas, the sub-areas within these curricular areas, and on each test or observational item included in that sub-area. The difference between the means of the two samples was determined for each area, sub-area, and item. Using this difference, the standard deviation was calculated for each pair of mean scores, and a simple t test was run to determine the significance of the difference between these scores.

A comparison of the programs

This portion of the chapter is concerned with an explanation of the research design and procedures used in comparing the programs of the Early Childhood Unit at University Elementary School and in selected kindergarten classrooms of the Los Angeles City School System.

During the spring and summer of 1969 the writer was engaged in developing a comprehensive set of categories which could be used to guide subsequent observations in the classrooms of both institutions. Several sources were utilized in developing these categories. First, the categories utilized for classroom observations in "The Study of Childhood Schooling" (Goodlad, 1970) were carefully scruti-

nized. Some categories were deleted while others were revised and used as a basis for the categories subsequently utilized in this study. Second, other resources on classroom observations were examined. Of special help were articles and books by Medley and Mitzel (1963), Flander (1960a), and Sears (1963). These articles were primarily useful in determining the format to be utilized in writing this checklist of categories. Third, many classrooms were observed to determine types of activities involved. These activities and behaviors were translated into observational categories or sub-categories and incorporated into the instrument. Fourth, the writer's experiences in education and his ingenuity were excercised in developing new categories or sub-categories as well as in revising those from other sources. A complete set of the observational categories and sub-categories were expanded and compiled into a "Checklist of Classroom Observational Categories," an instrument which is included in Appendix III and described later in this chapter.

The writer contacted each of the Los Angeles City Schools which had been attended by students in the kindergarten sample and requested permission to observe in their kindergarten program. In only one school was such an observation denied. The writer subsequently visited fifteen of the sixteen classrooms from which the public school sample of children was drawn and in all five of the classrooms which make up the Early Childhood Unit at University Elementary School. Each classroom was visited for an entire school session ($2\frac{1}{2}$ to 3 hours) and was followed by a short interview with the teacher. The observation categories were noted and an anecdotal

account was kept of the class session and the teacher interview. Immediately following each observation, the anecdotal accounts were recorded on the "Checklist of Classroom Observational Categories."

Information on the "Checklist of Classroom Observational Categories" is recorded in six major categories each of which is divided into a number of different aspects. The first major category is that of curriculum content which includes the sources of curriculim decision, the existence and specificity of aims and objectives, and the content areas emphasized. The sources of curriculum decisions are recorded in terms of what sources the teacher uses in deciding what to teach: his past experience, district or school publications, other publications. The existence and specificity of aims and objectives is reported in three degrees ranging from no evidence of aims or objectives to clearly defined aims and objectives. No evidence of aims or objectives means that no aims or objectives are observed in district or school publications or in conversation with the teacher. Very general aims and objectives means that aims or objectives are stated by school or district publications and by the teacher but they are not stated in terms of how the student is to behave when the objective is reached. Clearly defined aims and objectives means that aims and objectives are presented in school or district publications or by the teacher in terms of how the student is to behave when the objective is reached. To obtain information on what content areas are emphasized in the school program, activities observed during the class session were arbitrarily assigned by the writer to the following content areas: reading readiness, mathe-

matics, science, social studies, motor skills, oral language and communication, music and rhythms, arts and crafts, and health and safety. The emphasis on each content area was recorded during both large group instruction when the teacher works directly with a number of students at one time, and during independent activities where related activities are provided and students can work and participate in the activity as individuals or as part of a small group with or without direct teacher contact. The content emphasis for each area is reported in three degrees ranging from heavy emphasis to little or no emphasis. Heavy emphasis means that an activity related to that content area is scheduled regularly for an adequate period of time (minimum of 10 minutes). Moderate emphasis means that an activity is scheduled regularly for a short period of time (less than 10 minutes) or scheduled irregularly. Little or no emphasis means that no activity related to that curriculum area is scheduled or is scheduled irregularly for only short periods of time (less than 10 minutes).

The second major category of classroom observation is concerned with the instructional process. This category includes group instruction, independent activities, transition and routine, and the basis for selecting learning activities. Group instruction was observed in terms of the percentage of time during which students work in assigned groups, the instructional group size (whole class or less than whole class), and the observed instructional patterns (teacher talk, teacher-child interaction, child-child interaction, teacher demonstration, child's manipulation of material, teacher's reading to students, and teacher directed games). Independent

activities were observed in terms of the percentage of time during which the student has a choice as to the activity in which he will participate, a judgement as to the degree of free choice allowed, the availability of materials, and the role of the teacher. The degree of free choice is reported in four degrees ranging from total freedom for the students to choose an activity to almost total teacher direction. The availability of materials is presented by a scale which ranges from most materials being available to students to very limited materials which are provided and regulated by the teacher. The role of the teacher ranges from giving of information to observing with little or no participation. Transition and routine was observed in terms of the percentage of school time spent in moving students from one activity to another and in terms of the degree of structure, ranging from loosely structured (student directed), to tightly structured or formal (controlled by the teacher). The last aspect which is related to the instructional process is an assessment of the basis for the selection of learning activities. This aspect is recorded on a scale which is the same as that used to determine the sources of curriculum decisions made by teachers as described earlier in this chapter.

A third major category used for classroom observation is that of learning climate. This category is described in terms of daily schedule, classroom rules, techniques utilized for student control, degree of teacher involvement, mannerisms of teachers toward students, degree of student involvement, and the pacing of classroom activities. The daily schedule was assessed in relationship to the degree of

freedom with which the daily schedule could be changed, ranging from flexible with no set daily or weekly schedule to rigid with a set daily and/or weekly schedule. Classroom rules were viewed as being permissive if there were few or no classroom rules or guidelines. They are recorded as protective if there were a few rules or guidelines which were primarily based on the safety of the children. Rules were considered as restrictive when there were many of them or when the rules eliminated the student's confrontation with the environment. Techniques utilized for student control are recorded as mass positive reinforcement; selective positive reinforcement; mass use of signals such as "Shh," "Excuse me," or holding up a hand; selective use of signals; mass negative reinforcement; selective negative reinforcement; and ignoring the behavior. In any given classroom, any or all of these teacher behaviors may have been seen and are recorded.

The degree of teacher involvement involves a judgement and is recorded on a scale ranging from low to high. Teacher involvement which was judged to be low may be described as disorganized, ill prepared, or exhibiting little or no enthusiasm. Moderate involvement is seen as possessing some of the following characteristics: organization, preparation, routine procedures, and some enthusiasm. A teacher reported as highly involved is described as organized and busy, enthusiastic, or spontaneous. The aspect involving the mannerisms of teachers toward children is judged as being positive when it is characterized by honesty, acceptance, and praise; neutral where there is little or no teacher response to students; and negative when most teacher responses are punitive, reprimanding, or scolding. The

degree of student involvement is recorded on a scale which is similar to that used for recording teacher involvement. Low student involvement included such characteristics as flitting, inattention, and lack of enthusiasm. Student involvement was rated as moderate when they were busy with tasks, following routines, and showing some enthusiasm. Students who were busy, questioning, enthusiastic, and spontaneous are rated as highly involved.

The final aspect included under learning climate is that of the pacing of classroom activities. This is rated as either rapid, moderate, or slow. A rapid pace means that students are hurried or pushed or that much inconsistency and impatience are evidenced. A moderate pace is described as relaxed, busy, consistent, and patient. Where there is wasted time, insufficient work, or a lag between activities, the pacing of classroom activities is described as slow.

The fourth major category is comprised of a detailed description of the physical environment of the institutions visited. This includes a detailed description of the characteristics of the classroom and the playground as well as a comprehensive listing of the furniture and equipment which is found in each area.

The fifth major category considered is student population. This category encompasses school enrollment, class size, class grouping, socio-economic status of the school population, and the age span of the students. The aspects of school enrollment, class size and age span are self explanatory. Class grouping is recorded as being heterogenous or homogenous (as determined by any criteria). The socio-economic level of the school is based on the rating of the

Shevky-Bell Index (1955) and is recorded as being middle class or as upper middle class.

The last major category included in this portion of the study is staffing. This category encompasses the number of teachers, number of sessions taught per day and length of the sessions, evidence of cooperative or team teaching, years of teaching experience, the existence of para-professional help, and the existence of student teachers. Most of this category entails only a tally of quantitative responses and, therefore, is felt to be self-explanatory.

The study concludes with a discussion of the patterns and relationships which appear to exist between the differences found in student performance and those found between the programs of the two institutions.

Chapter III

ANALYSIS OF THE DATA

The purpose of this chapter is to analyze the raw data and to provide comparisons for each category in which data have been collected. The chapter is divided into two parts: the first is concerned with a comparison of the kindergarten programs of the selected public schools and the program of the Early Childhood Unit at University Elementary School, and the second involves a comparison of student performance between the two student samples as it relates to the three chosen curriculum areas: reading readiness skills, social skills, and self-related skills.

Characteristics of the Programs

This portion of the chapter is concerned with an analysis of the data related to the programs of the selected public school kindergartens in the Los Angeles City School System and of the Early Childhood Unit at University Elementary School. The data are reported by categories which were developed by the writer for observing in the classrooms and for organizing the data collected.

The researcher made comprehensive observations in fifteen public school kindergarten classrooms of the Los Angeles City School System and in all five classrooms of the Early Childhood Unit of University Elementary School at University of California, Los Angeles. Each observation was approximately three hours in length and consisted

of an anecdotal account of the activities of the classroom and the comments of the teacher. Immediately following each observation, the anecdotal accounts were recorded on the "Checklist of Classroom Observational Categories" (Appendix III).

An analysis of these observations shows a high degree of uniformity among the public school kindergarten classrooms involved. However, many major areas of difference were observed between the classrooms of the public school kindergarten and the program of the Early Childhood Unit at University Elementary School. A comprehensive report of these findings is included in Appendix III.

Information on the "Checklist of Classroom Observational Categories" is recorded and analyzed in relationship to six major categories, each of which contains a number of different aspects. The first major category is that of curriculum content which includes the sources of curriculum decisions, the existence and specificity of aims and objectives, and the content areas emphasized. The sources of curriculum decisions are recorded in terms of what sources the teacher uses in deciding what to teach: his past experience, district or school publications, other publications. In relationship to this aspect the researcher found little difference between the program at University Elementary School and the program of the public school kindergarten. In both programs the primary sources for curriculum decisions are the teacher's experiences and background or school publications and guides. In all of the University Elementary School classrooms and in five of the kindergarten classrooms, both sources were relied on heavily. The other ten kindergarten classrooms were

divided evenly, five relying almost entirely on the teacher's experience and background and the other five relying almost exclusively on school district publications. In two of the University Elementary School classrooms and in one of the kindergarten classrooms other professional books and publications were also listed as sources of curriculum decisions. The existence and specificity of aims and objectives refers to the aims and objectives as observed in district and school publications or as stated by the teacher. On this aspect of curriculum content, the researcher found more evidence of specific aims and objectives in the University Elementary School program than in the program of the public school kindergarten. In University Elementary School publications, the aims and objectives are clearly written and the teachers in all five classrooms can state them in terms of what the student is to learn. In publications regarding the kindergarten program of the Los Angeles City Schools, aims and objectives are of a very global nature. Only three of the kindergarten teachers interviewed were able to state their aims and objectives in terms of what the student is to learn.

To obtain information as to what content areas are emphasized in the programs of the two institutions, classroom activities were observed during the class session and arbitrarily assigned by the writer to the following content areas: reading readiness, mathematics, science, social studies, motor skills, oral language and communication, music and rhythms, arts and crafts, and health and safety. The emphasis on each content area was recorded during both large group instruction, when the teacher works directly with and directs the

activities of a number of students at one time, and during independent activities where related activities are provided and students can participate in an activity as individuals or as part of a small group with or without teacher contact. In the programs of both institutions, the writer often found evidence of a content area being presented during both group and independent activities. From classroom to classroom the amount of class time spent on many of the content areas does not vary significantly. However, the writer found that in most kindergarten classrooms much of the class time devoted to a particular content area is limited to whole group instruction while in the University Elementary School program more of the class time spent on that area is involved with independent activities. An analysis of the observations shows that both institutions give moderate or heavy emphasis to the area of reading readiness. In all five of the University Elementary School classrooms, the major emphasis on reading readiness skills is evident during independent activities with only moderate emphasis during group instruction. This pattern is reversed in the kindergarten program where in fourteen of the classrooms moderate to heavy emphasis on reading readiness was noted during group instruction, while during independent activities moderate to heavy emphasis was observed in only seven of the classrooms and little or no emphasis in the other eight classrooms.

The investigator noted a greater emphasis on mathematics skills in the program at University Elementary School than in the program of the public school kindergarten. This difference in emphasis on mathematics is particularly noticeable during independent

activities. In all five of the University Elementary School classrooms, moderate to heavy emphasis is given to mathematics during independent activities with little or no emphasis given during group instruction. In twelve of the kindergarten classrooms the observer noted little or no emphasis on mathematics during independent activities. During group instruction, nine of the kindergarten classrooms appeared to give moderate emphasis to mathematics while in the other six classrooms, little or no emphasis was given to this area.

The area of science is given moderate emphasis by both institutions. In all five of the University Elementary School classrooms moderate emphasis is given to science during independent activities with only occasional emphasis given during group instruction. The observer noted moderate emphasis on science during group activities in six of the kindergarten classrooms. Six kindergarten classrooms were also observed as giving moderate emphasis to science during independent activities. In five of the kindergarten classrooms little or no emphasis on science was observed in any part of the class session.

The content area of social studies seems to defy definition. The observer found that what is being called social studies in the public school kindergarten is not related to what is called social studies in the program at University Elementary School. Social studies in the kindergarten program is defined entirely in terms of a study of the "community" and is limited to block play (the building of a community) which is carefully controlled by the teacher. Social studies in the University Elementary School program is defined

in terms of the student's role in his classroom community and is seen as pervading every part of the school day. For these reasons, the writer feels that a valid comparison between the emphasis given to social studies by the two programs is not possible.

Motor skills is another content area which is given greater emphasis in the University Elementary School program than in the program of the public school kindergarten. All five classrooms in the University Elementary School program were observed as giving heavy emphasis to motor skills while in the kindergarten program the observer noted moderate to heavy emphasis on motor skills in eight of the classrooms with little or no emphasis in the other seven classrooms. In both of the programs, the emphasis on motor skills is limited to independent activities with little or no emphasis during group instruction.

Oral language and communication is a content area on which the observer finds heavier emphasis being placed by the University Elementary School program than by the kindergarten program. In all five of the University Elementary School classrooms the emphasis on oral language and communication skills is high, while heavy emphasis is given to oral language and communication skills in only two of the kindergarten classrooms with another eight giving moderate emphasis. In the other five kindergarten classrooms, little or no emphasis is given to oral language and communication skills. As was the case with motor skills, the emphasis on oral language and communication skills is limited almost entirely to independent activities with the observer noting moderate emphasis during group instruction in only

two of the University Elementary School classrooms and in only three of the kindergarten classrooms.

The emphasis being placed on the area of music and rhythms is not significantly different for either institution. Most of the emphasis on this content area is observed during group instruction activities with little or no emphasis seen during independent activities. The observer notes only moderate emphasis on music and rhythms in two of the classrooms of the University Elementary School program with little or no emphasis in the other three. In four of the classrooms in the kindergarten program,the emphasis on music and rhythms is rated as high and in six other classrooms the emphasis is rated as moderate.

In the content area related to arts and crafts, the observer found greater emphasis being given in the University Elementary School program than in the program of the public school kindergarten. Heavy emphasis on arts and crafts is noted in all five of the classrooms in the University Elementary School program while heavy emphasis on arts and crafts is noted in only one of the kindergarten classrooms. Moderate emphasis on arts and crafts is observed in eight other kindergarten classrooms. Most of the emphasis on arts and crafts by both institutions is seen during independent activities with only two kindergarten classrooms observed as giving moderate emphasis during group instruction.

The area of health and safety is characterized by a lack of emphasis by both institutions. The researcher reports moderate emphasis on health and safety in only two of the University Elementary

School classrooms while in all other classrooms observed in both programs little or no emphasis on this area is seen.

The second major category of classroom observation is concerned with the instructional process. This category includes:

1. group instructional activities -- those activities which are assigned and controlled by a teacher and in which students as a group must participate.
2. independent activities -- those activities from which students may choose and in which they may participate as individuals or as part of a small group with or without direct teacher contact.
3. transition and routine -- those activities which involve moving from one activity to another or are concerned with the mechanical routines of the school day such as taking roll or collecting milk money.
4. selecting learning activities -- the sources which are utilized by the teacher in selecting the learning opportunities which are provided in the classroom.

An analysis of this category reveals a gross difference in the primary mode of instruction in the two programs. In the University Elementary School program an average of 64 percent of the school day is devoted to independent activities while 31 percent is spent in group instruction. Conversely, in the kindergarten program, an average of 24 percent of the class time is devoted to independent activities while 64 percent of the time is spent on group instructional activities. The remaining time in each program is devoted to

transition and routine -- an average of five percent of the class time in the University Elementary School program and 12 percent in the kindergarten program.

In analyzing the aspect related to group instruction, the investigator found that group size throughout the University Elementary School program varies from small groups of two or three students to groups which are composed of the entire class. This is contrasted with the kindergarten program in which the observer was unable to find an instructional group which was composed of less than the whole class.

The instructional patterns observed during group activities in the programs of both institutions are quite similar. Teacher talk and the teacher's reading to the students are instructional patterns which can be observed in every classroom visited in both institutions. The pattern related to the child's manipulation of materials was observed in eight of the kindergarten classrooms and throughout the University Elementary School program. Child to child interaction (direct conversation between students as opposed to conversation which is directed through the teacher) and teacher directed games are instructional patterns which were observed in only three of the public school kindergarten classrooms during group instruction.

The aspect related to independent activities is analyzed in terms of the freedom of choice allowed to the student, the availability of materials to the student, and the role of the teacher. In the first of these areas, freedom of choice, little difference is observed in the programs of both institutions. In four of the

University Elementary School classrooms, children are free to choose from all activities available in the environment while in one classroom students are limited to activities which are selected by the teacher. This is similar to the pattern of the kindergarten program where in nine of the classrooms students are free to choose from all activities available in the classroom, while in three other kindergarten classrooms children must work with those activities which are selected by the teacher. In two other kindergarten classrooms, students are forced to choose from two or three activities which are pre-selected by the teacher. Although both programs provide freedom for the student to choose, the availability of materials is markedly less in the kindergarten program than in the program at University Elementary School. All five of the classrooms in the University Elementary School program yield evidence that most materials in the environment are available to the students. However, in only six of the kindergarten classrooms are most materials in the environment available to students, while in the other nine kindergarten classrooms available materials are limited to a few which are set out by the teacher. In looking at the teacher's role during independent activities, the observer found a wide range of teacher behavior with a pattern of somewhat more directing and limiting behavior among teachers in the kindergarten program than among teachers at University Elementary School. In all five of the University Elementary School classrooms the teacher role appears to be one primarily of facilitating or observing with limited participation. On the other hand, facilitating or observing is a common pattern in only five of the

kindergarten classrooms. In five of the kindergarten classrooms the teacher's role seems to be one of giving instructions or information while in the other five classrooms the role is one of directing and limiting the activities.

The area of transition and routine yields evidence of more structure in the public school kindergarten than in the University Elementary School program. In four of the classrooms in the University Elementary School program, transition and routine are seen as loosely structured while in the other classroom the structure is rated as moderate. This is contrasted to the kindergarten program where transition and routine are seen as tightly structured in six classrooms and as moderately structured in nine others.

The basis for the selection of learning activities in both institutions is primarily school and district publications and the teacher's experience and background. Throughout the early childhood program at University Elementary School, both of these sources are used as well as information obtained from other books and publications. The activities in nine of the kindergarten classrooms appear to be based both on school or district publications and the teacher's experience and background. In the other six kindergarten classrooms three teachers seem to rely entirely on their experience and background while the other three rely almost entirely on school publications. In both institutions the selection of learning activities is influenced by the availability of materials and equipment.

The third major category to be reported is learning climate. This category is analyzed in terms of seven different aspects: daily

schedule, classroom rules, techniques utilized for student control, degrees of teacher involvement, mannerisms of teachers toward children, degree of student involvement and the pacing of classroom activities. The daily schedules observed in the public school kindergarten classrooms give evidence of less flexibility than in the program at University Elementary School. In four classrooms of the University Elementary School program, the observer notes a moderately flexible daily schedule while in the other classroom the schedule is seen as moderately rigid. The daily schedule in five of the kindergarten classrooms is rated as rigid, four are rated as moderately rigid, and six others are rated as moderately flexible.

Classroom rules are seen as slightly more restrictive in the public school kindergarten than in the program at University Elementary School. Throughout the University Elementary School program, classroom rules are described as protective. In six of the kindergarten classrooms the rules are rated as restrictive while in seven others, classroom rules are described as protective. In two of the kindergarten classrooms, few or no set classroom rules were observed and these classrooms are described as permissive.

An analysis of the aspect related to the techniques utilized for student control reveals similarities between the programs of the two institutions. The main difference is in the extend to which these techniques are utilized with a group of students as opposed to being utilized with individual students, a characteristic not measured by the instrument used. In all of the kindergarten classrooms and throughout the University Elementary School program, mass positive

reinforcement is common. Selective positive reinforcement is noted as a technique throughout the University Elementary School program and in nine of the kindergarten classrooms. Mass negative reinforcement is a technique noted in five of the kindergarten classrooms but was not observed in the University Elementary School program. Selective negative reinforcement is a technique utilized in the University Elementary School program and in seven of the kindergarten classrooms. Throughout the University Elementary School program and in four of the kindergarten programs there is evidence that behavior is purposely ignored as a technique for student control. Another very popular technique utilized for student control in the public school kindergarten is the mass use of signals such as raising a hand; the teacher's use of "Shh," "Excuse me," and so forth. This was noted in eight of the kindergarten classrooms observed.

The degree of teacher involvement is characteristically described as moderate to high in both institutions. Teacher involvement is seen as high in all five of the University Elementary School classrooms. In only two kindergarten classrooms is teacher involvement seen as being low. Moderate teacher involvement is observed in eight of the kindergarten classrooms while in five others, teacher involvement is rated as high.

Mannerisms of teachers toward children is an aspect in which wide variation was seen. The dominant teacher mannerisms observed throughout the University Elementary School program and in six of the kindergarten classrooms are rated as positive. In four of the kindergarten classrooms observed, these mannerisms are seen as neutral and

possessing little or no response to children while in five others the mannerisms are rated as predominantly negative or punitive.

The degree of student involvement observed in the kindergarten classrooms appears to be somewhat less than that in the program at University Elementary School. In all five of the classrooms at University Elementary School, and in two of the kindergarten classrooms, student involvement is rated as high. In eight kindergarten classrooms student involvement is rated as moderate and in five others rated as low.

The pacing of activities in the public school kindergarten appears to be somewhat slower than in the program at University Elementary School. Throughout the University Elementary School program, and in seven of the kindergarten classrooms, the pace is rated as moderate. The pace is rated as slow in six kindergarten classrooms and as rapid in the other two classrooms.

The fourth major category to be reported involves the physical environment. This category includes the aspects of classroom facilities, standard classroom furniture and equipment, playground facilities, and standard playground equipment. The observer found little variation in the physical environment of the kindergarten classrooms included in this study. However, in the program at University Elementary School more classroom and playground area, as well as more furniture and equipment, are available for student use.

Classroom facilities (the amount of floor space, access to other areas, and built-in equipment) in both institutions are similar. The only difference is in floor space available to students. Thirteen

of the kindergarten classrooms and one of the University Elementary School units consist of one standard classroom of approximately one thousand square feet. The other four classrooms in the University Elementary School program are joined to form two large units, each consisting of approximately two thousand square feet. The two other kindergarten units consist of a suite of two or three small rooms. Only at University Elementary School is there a covered patio area which is contiguous to the classroom.

Common among all of the kindergarten classrooms visited is a group area where students are to place their coats, lunches, and other belongings. At University Elementary School, each student is supplied with an individual locker in the classroom for keeping his private belongings. Another characteristic which is common to the public school kindergarten, but not to the University Elementary School program, is the presence of drapes which are used to darken the room for showing films, slides, filmstrips, and so forth.

All of the classrooms visited in both of the institutions have restroom facilities with direct access to the classroom, sink and drinking facilities in the classroom, asphalt tile floors, and direct access to the play area.

Standard classroom furniture and equipment which can be found in all classrooms of both institutions include a rug or mat area sufficient for all students; a piano; cabinets for blocks, supplies, and books; a record player; bulletin boards; an aquarium; and solid floor blocks. Although the researcher noted much similarity in the furniture and equipment found in the public school kindergartens

visited, there are areas of wide variation between the kindergarten program and that of the program at University Elementary School. Throughout the University Elementary School program table work stations are available for all students while in only two kindergarten classrooms are table work stations available for all students. Although chalk boards are available for student use in all five of the University Elementary School classrooms, they are available for student use in only four of the kindergarten classrooms. In fourteen kindergarten classrooms, a chalk board is available for teacher use. Projection screens are standard equipment in fourteen of the kindergarten classrooms but are not standard equipment in individual classrooms of the University Elementary School program. Listening centers, which are used daily in each of the University Elementary School classrooms, are also present throughout the kindergarten program, however, the observer found these centers being used in only four of the kindergarten classrooms. A primary typewriter and hollow building blocks are standard classroom equipment throughout the University Elementary School program but were not observed in the kindergarten classrooms. In one kindergarten classroom and throughout the University Elementary School program, paint easels and clay carts are standard equipment. Rest mats are standard equipment in nine of the kindergarten classrooms.

The major difference in the playground facilities of the two institutions is the grass play area at University Elementary School which is not found in any of the kindergarten units observed. Common elements in both institutions are the existence of paved play areas

and the existence of a sand box area, which are found throughout both programs.

The greatest differences in the physical environment of the two institutions is the aspect of standard playground equipment and materials. Here, the observer found much more equipment available to students in the University Elementary School program. Items which could be found in the University Elementary School program but not in the public school kindergarten include: trees and ropes for climbing, large boxes and boards for building, large pipes for hiding and climbing, bicycles and tricycles, animal cages and animals, work benches and tools, swings, climbing towers, and dramatic play equipment (boat, car, playhouse, and so forth). Horizontal bars, horizontal ladder, jungle gym, hollow blocks, paint easels, and student work tables are equipment which are standard in the play areas of both institutions. Sand play equipment is found throughout the University Elementary School program and in nine of the kindergarten units visited.

The fifth major category to be analyzed is student population. In three aspects of this category -- class size, class grouping, and age span of students -- the observer found gross differences between the program of the public school kindergarten and that of University Elementary School. Class size in fourteen of the kindergarten classrooms falls between twenty and twenty-five students per full time teacher while in the other classroom the class size is between twenty-five and thirty. Four classrooms in the University Elementary School program are joined to form two large units, each of which is composed

of approximately forty students and at least two full time teachers. The other classroom is composed of approximately twenty students and one teacher. The number of students per fulltime teacher in the University Elementary School program is approximately eighteen -- a figure which is somewhat less than for the public school kindergarten. Students in twelve of the kindergarten classrooms are homogeneously placed in classes using age as the criteria for placement, the youngest students attending the morning session and the older ones attending the afternoon session. In the other three kindergarten classrooms, assignment of students to classes is quite heterogeneous or random. A student in the University Elementary School program is assigned to classes on the basis of the peer group which seems to best meet his needs (academic, social, physical, and so forth) and on the basis of the teacher style which will best meet his needs (demanding, highly structured, nurturing, loosely structured, and so forth).

State law in California requires a student to be four years and nine months old before entering kindergarten and five years and nine months old before entering first grade. Thus, the age range of children in a kindergarten class seldom exceeds one year. This student age span is reduced to only six months in twelve of the kindergarten classrooms in this study by having the "younger" students attend the morning session and the "older" students attend the afternoon session. University Elementary School students may be enrolled in early childhood any time after the child reaches the age of three years and nine months. The student commonly remains in early child-

hood for a period of two, sometimes three years -- a period of time which is considerably longer than in the public school kindergarten.

Two aspects of this category in which the observer found little difference between the two programs are total school enrollment and the socio-economic status of the school population. Four of the public schools studied exceed 750 students with all others including University Elementary School containing between 450 and 750 students. In the program at University Elementary School and in ten of the public schools included in the study, the researcher described the socio-economic status of the students attending as upper middle class while those in two other public schools were described as middle class.

The last major category to be analyzed is staffing. This category is composed of six aspects: the number of early childhood or kindergarten teachers in the school, the teaching responsibilities, evidence of cooperative or team teaching, years of teaching experience, the number of teacher helpers or aides, and the number of trainees. On only the aspects related to teaching responsibilities and evidence of cooperative or team teaching is there a gross difference between the programs of the two institutions. The teaching responsibilities of fourteen of the kindergarten teachers observed amounts to two class sessions per day of 150 minutes each while in one kindergarten and at University Elementary School the teacher is responsible for only one class session of 180 minutes per day. All teachers in the University Elementary School program are part of a teaching team (two or more teachers who plan, teach, and evaluate

together), while in only one kindergarten classroom was any evidence of cooperative or team teaching observed. In three kindergarten classrooms, the observer noted some evidence of cooperative planning while in the other eleven classrooms there was no evidence of either cooperative planning or cooperative teaching.

In two of the public schools visited there are three kindergarten teachers while in all the others there are only two. The University Elementary School program is composed of seven teachers, some of whom have less than full time teaching responsibility.

Thirteen of the kindergarten teachers and four of the University Elementary School teachers involved in the study have had more than seven years teaching experience. Two other kindergarten teachers and one University Elementary School teacher have had between three and seven years teaching experience while two University Elementary School teachers, but none of the kindergarten teachers, have had less than three years of experience.

The only para-professional staff found in the kindergarten classrooms visited are volunteer parent aides which were found in two classrooms. At University Elementary School a small amount of paid teacher aid time is available -- approximately two hours per teacher per week.

Student teachers or intern teachers are found throughout the University Elementary School program and in five of the kindergarten classrooms. In two kindergarten classrooms, student participants are also involved in classroom activities.

Summary

Many gross differences are now evident in comparing the early childhood program at University Elementary School and the kindergarten program of the Los Angeles City School System. One of the first to be noted is the greater degree of specificity with which the goals and objectives of the University Elementary School program are defined. The goals and objectives of the University Elementary School program are clearly and precisely stated in terms of how the student is to behave whereas the goals and objectives found in the kindergarten program are of a very general or global nature.

A comparison of the emphasis given to specified areas of the curriculum reveals that a similar amount of time is spent on most content areas by both programs. The only difference noted is that slightly more time is devoted to oral language, arts and crafts, and motor skills in the University Elementary School program. However, throughout all of the curricular areas it is significant to note that in the kindergarten program the heaviest emphasis, in terms of time spent on that area, is placed on whole class instruction whereas in the University Elementary School program the heaviest emphasis is placed on independent activities.

A look at the instructional process reveals that the major characteristic of the public school kindergarten program is whole class instruction where nearly two-thirds of the school time is devoted as compared to the program at University Elementary School where less than one-third of the time is used in this manner. Group instruction at University Elementary School provides opportunities

for more pupil-teacher interaction than does the program in the public school kindergarten. However, the major characteristic of group instruction in both institutions is the teacher talking or reading to the student.

An analysis of the independent activities encompassed by the programs of each institution reveals that a wider range of materials and equipment are made available to students in the University Elementary School program than to those in the public school kindergarten. During these activities, in the public school kindergarten program the role of the teacher is one of giving information or directing and limiting, whereas at University Elementary School the teacher is more of an observer or facilitator.

Significantly more time is devoted to transitions and routines in the public school kindergarten program than in the early childhood program at University Elementary School. In the kindergarten program, these periods of time are characterized by structure and formal routine, whereas in the University Elementary School program there is little structure.

An analysis of the category related to learning climate reveals a daily schedule for the public school kindergarten which is less flexible than for that of the program at University Elementary School. The techniques utilized for student control in the kindergarten program tend to be directed toward groups of students or the whole class, whereas those used in the University Elementary School program are directed toward individual students. The pacing of classroom activities is slow and student involvement is less in the

public school kindergarten than in the program at University Elementary School.

Gross differences were observed in the physical environment of the two institutions especially as it relates to room size and playground equipment. At University Elementary School, classroom space is somewhat greater and the playground environment is noticeably richer.

In analyzing the student population, the observer found that although class size is larger, the ratio of pupils to teachers in the University Elementary School program is less than that of the public school kindergarten. It was also noted that the age span in the public school kindergarten program encompasses only one year or less, whereas the program at University Elementary School involves a two or three year span. Another significant difference between the programs is related to criteria for class grouping. University Elementary School students are placed according to their peer group needs, their teacher needs, and their academic needs, while public school kindergarten children are placed in accordance with their birth dates.

In the category related to staffing, the writer found that the public school kindergarten teacher is faced with a greater number of students each day and, by teaching two shortened class sessions, he teaches a greater portion of the day than his counterpart in the University Elementary School program. Whereas an analysis of the University Elementary School program gives evidence of cooperative planning and teaching, very little of this is observed in the public school kindergarten.

Student Performance

In this portion of the chapter the writer compares the performance of students in the program of the Early Childhood Unit at University Elementary School with the performance of students in a portion of the kindergarten program in the Los Angeles City School System. This comparison is limited to the three curricular areas: reading readiness skills, social skills, and self-related skills which have been described in Chapter Two. The writer analyzes the data pertaining to each curricular area as well as the sub-sections and items included in each curricular area.

Trained observers conducted extensive observations and testing on all students included in the study. Based on an analysis of the data collected in each of the three curricular areas, the first hypothesis is supported while the other two are rejected. There is indeed a difference in the performance of students on all three curricular areas: reading readiness skills, social skills, and self-related skills. For all three curricular areas the performance of students in the University Elementary School sample is significantly higher than the performance of students in the public school kindergarten sample. A comprehensive report of the data to support these findings can be found in Appendix IV.

The first curricular area analyzed is reading readiness skills, an area which is emphasized heavily in the publications of the kindergarten program of the Los Angeles City Schools but is not mentioned in the publications of the early childhood program at

University Elementary School. For this total curricular area, the findings indicate that the performance of students in the University Elementary School program is significantly higher, slightly beyond the .01 confidence level, than the performance of students in the public school kindergarten. In three of the sub-sections: fine motor skills, oral language skills, and mechanical skills, the results favor the University Elementary School program beyond the .01 level of significance. The results for the sub-sections related to auditory discrimination skills, visual discrimination skills, and recall comprehension skills favor the University Elementary School program beyond the .05 level of significance.

The second curricular area analyzed is social skills which is described in terms of three sub-areas: works and plays on a cooperative level with another child; utilizes adults as sources of information, support, guidance, and control; and participates as a member of the total group. This is an area which is heavily emphasized in the publications of both the public school kindergarten program and the early childhood program at University Elementary School. An analysis of the data collected for this area reveals that the performance of the students from the University Elementary School sample is significantly higher than for students in the public school kindergarten sample. The findings for this total curricular area as well as for each of the sub-sections favor the University Elementary School sample beyond the .01 level of significance.

The third curricular area, self-related skills includes four sub-areas: independence in caring for his own physical needs and

responsibilities, independence in relating to other persons, an awareness of his own body and its functions in the social and physical world, and an awareness of his feelings. This area is emphasized in the publications of the Early Childhood Unit at University Elementary School and receives no mention in the publications of the kindergarten program in the Los Angeles City Schools. As might be expected, the results for this total area as well as those for each of the subareas favor the students in the University Elementary School sample over those in the kindergarten sample well beyond the .01 level of significance.

An appraisal of the data collected in all three curricular areas reveals some interesting observations and patterns. One such pattern noted is the highly verbal nature of students in the University Elementary School program. On any item requiring a verbal response, such as answering questions or expressing an opinion, the performance of students in the University Elementary School program is consistently much higher than the performance of students in the public school kindergarten. Throughout the entire testing and observing process, the observers recorded frequent comments about this highly verbal nature of University Elementary School students.

Another very interesting pattern involves the high degree of independence exhibited by students in the University Elementary School program. On all observation and test items which are influenced by the student's independence or aggressiveness, such as demanding his share, expressing his desires, or getting his own materials, the performance of students in the University Elementary

School program is significantly higher than the performance of students in the kindergarten program. In addition to the data collected on the instruments, the observers recorded frequent comments and notes about this independent or aggressive behavior of University Elementary School students. Such notes often told of the reluctance of some kindergarten students to accompany the observer to the testing area or of the University Elementary School student who questioned the observer as to why these questions were being asked.

Chapter IV

INTERPRETATION OF THE DATA

In this chapter, the writer reviews the findings discussed in Chapter Three, suggests relationships among these findings, and attempts possible interpretations and explanations of the findings.

A major difference in the programs of the two institutions involves the specificity with which the goals and objectives of the University Elementary School program are stated contrasted with the very general, and often only implied, goals of the public school kindergarten. Interviews with the teachers in both programs seem to indicate that teachers in the kindergarten program do not see objectives as being as important as do teachers in the University Elementary School program. Teachers in the University Elementary School program can readily state the objectives of their program and classroom activities are planned around these objectives. Most teachers in the kindergarten program cannot state the objectives of their program and often express the opinion that objectives are not necessary for kindergarten children or that objectives already exist in the mind of the "good" teacher. This expressed lack of interest in objectives by the kindergarten teacher seems to be somewhat contradictory to findings in this study which indicate that in making decisions on what to teach or what activities to use in the classroom the teachers are heavily dependent on the general goals as stated in the course of study or other publications which are pre-

pared by the school district. Another finding of some interest indicates that when presented with precise objectives which are formulated to describe their broad goals, kindergarten teachers tend to agree that these objectives are "just what they are teaching." However, this is also contradicted by evidence which indicates that there is little correlation between these specific objectives and the activities which are provided in the classroom. Thus, the writer concludes that the apparent differences between teachers in the two programs as to their interest, skills, and experience in the use of precise objectives are factors which may have affected the performance of students on the items included in this study -- items which are based on precise objectives.

It would seem to the writer that one explanation for the significant differences in the performance of students representing both institutions may be directly related to this lack of precise objectives. It is reasonable to consider that when a program is geared to achieving specific objectives, it is much more likely to reach those objectives than one which is not so designed. This hypothesis seems to be supported by the findings in this study which show that for self-related skills, a curricular area which is well defined in the University Elementary School program but lacks any definition in the public school kindergarten program, a highly significant difference in student performance is found in favor of the University Elementary School program. A look at the other two curricular areas seems to show that as the curricular area is defined with more precision in the kindergarten program, there is less difference

in the performance of students in the two programs. In the curriculum area related to social skills which is defined in broad general objectives in the public school kindergarten and more specifically in the University Elementary School program, student performance favors the University Elementary School program but the differences are not as significant as for the area of self-related skills. This same pattern can be seen when looking at the area of reading readiness skills. In the kindergarten program, the skills in this area are defined with more specificity than for either social skills or self-related skills. Objectives related to reading readiness skills do not appear in the publications of the University Elementary School program, but the findings of this study indicate that a significant amount of time in the University Elementary School program is devoted to this curricular area. Although student performance in this area also favors the University Elementary School program, the differences are less significant than for either of the other curricular areas.

Another factor to be considered in explaining the gross differences in student performance is the lack of correlation between the stated objectives of the program and the activities provided for reaching those objectives. It is interesting to note that although oral language skills and motor skills are said to be an important part of reading readiness in the kindergarten program (as evidenced by the validation of these items by the judges), there is little or no evidence of daily activities which are designed to reach these goals (e.g., Children were given little opportunity to move and almost no opportunity to talk.). Whereas social skills and independence

skills are said to be highly important parts of the kindergarten program, a look at the data reveals that more than seventy-five percent of the day is devoted to whole class activity or moving from one area to another. These activities are totally teacher directed and do not provide an opportunity for practicing oral language skills, for practicing the skills involved in social interaction, or for the student to make decisions or to confront his environment -- opportunities which are important to learning the desired skills (Hunter, 1969; Popham, 1965). Independent activities, which account for the other twenty-five percent of the kindergarten day, are largely characterized by the teacher's giving information or directing and limiting activities. This teacher behavior again does not provide an opportunity for the student to practice making decisions, a skill which is necessary in becoming an independent learner.

In reviewing the data, one is impressed by the evidence of more structure and less flexibility in the kindergarten program as compared to the University Elementary School program. In the kindergarten program, instruction is directed to the whole class as opposed to small groups or independent students. This is an instructional pattern which again does not allow the student an opportunity to participate and practice the desired behaviors. These teacher dominated characteristics, by nature, limit the child's opportunities to confront his environment and to make choices or to work with skills and materials which are interesting to him or fulfill his needs. It would seem that the differences between the student samples as to the degree of student involvement or student interest could be at least

partially related to these differences in the amount of structure and flexibility in the two programs.

It would appear to the writer that the dichotomy between the "desired goals" and the activities provided may be related to the lack of specific objectives -- not knowing where he is going, the teacher is unable to decide how to get there. Another possible cause for this dichotomy is the apparent lack of knowledge on the part of the teachers as to the characteristics of learning theory (appropriate practice, interest, reinforcement, etc.) which are important in the teaching-learning act (Hunter, 1969a, 1969b, 1969c, 1969d).

Other factors to be considered as possible explanations for the differences in student performance between the two programs include the differences in the physical environment, the differences in the student population, and the differences in staffing. The roomier and richer environment of the University Elementary School program may affect student performance and student participation by providing an opportunity for a wider range of learning activities. However, it is the opinion of the writer that a roomier and richer environment in the kindergarten program with its large group, teacher dominated instruction, would not affect student performance in that institution. This opinion is supported by observations in the public school kindergarten program which indicate that the activities now provided make only limited use of the present environment. Large group instruction and transition routines, which comprise over seventy-five percent of the class time in the kindergarten program, make use of only very limited classroom or playground space and allow

little time for students to use materials and equipment. The observer noted that such things as tape recorders, record players, and listening centers, which are present in the environment, are seldom or never used in many of the kindergarten classrooms.

Serious consideration must be given to the possible influence of the somewhat lower pupil-teacher ratio which is found in the University Elementary School program. Although it is not possible for the writer to thoroughly support the hypothesis, it is his opinion that this factor may have a great influence on the difference in student performance. This hypothesis is based on the data which show that students in the University Elementary School program receive a much greater amount of individual and small group attention from the teacher than do those in the kindergarten program. The response to this attention seems to be very positive and student participation seems to be at a much higher level. Although this one factor might be seen as a great influence on student performance at University Elementary School, the writer contends that given the whole group, lecture type, teacher dominated patterns of instruction as seen in the kindergarten program, a lower pupil-teacher ratio would have little effect on the level of student performance.

Differences in the student grouping within the programs of each institution may also be a factor which has contributed to the wide variation in student performance. The much wider age span within each class at University Elementary School provides an environment in which students learn from each other. This phenomenon is easily observed during the school day and certainly contributes to

the student's degree of independence, a factor which was evident throughout the findings.

In the University Elementary School program, a student is placed in a class which has a peer group and a teaching style in which he is most likely to learn. In the kindergarten program, class assignments do not consider a student's needs, but are based solely on his chronological age. By considering the child's individual learning needs (emotional, social, physical, and academic), children in the University Elementary School program may have become more involved in learning, thus raising their level of performance. However, with the instructional patterns observed in the kindergarten program, which emphasize whole group, teacher directed activities with a minimum of peer interaction, it would seem that the criteria used for placing students into classes could have little effect on student performance.

Performance of students in the University Elementary School program may be influenced by the team teaching structure of that program. In this structure two or more teachers plan for, teach, and evaluate a single group of students. It would seem possible that the effect of one teacher on another would raise the level of teaching competency, thus affecting student performance. This is also a structure which allows more alternatives for both the student and the teacher, a factor which may increase both teacher and student involvement and, indirectly, the student's performance.

Finally, the emphasis on independent activities and student decision making in the University Elementary School program, as

opposed to the emphasis on whole group instruction and teacher direction in the kindergarten program, may be directly related to the highly verbal, highly independent behavior observed in students from the University Elementary School sample. Concomitantly, a child who feels comfortable in asking questions and who is autonomous in making discoveries within the school environment is more likely to have a broader base for building concepts and to communicate his thoughts with greater clarity in a testing situation. Thus, the University Elementary School program which places a value on inquiry and independence will probably produce a child whose performance is significantly higher.

Chapter V

SIGNIFICANCE OF THE FINDINGS

This study provides some very interesting and important findings, it also leaves many questions unanswered. In fact, it probably produces more questions than answers. However, the questions as well as the answers can have far reaching implications for the University Elementary School program as well as for early childhood education in general. In this chapter the writer points out some of these implications and some conditions which limit the extent to which the findings can be legitimately generalized. The chapter concludes with a presentation of some of the relevant questions which have been left unanswered by this study.

Implications for University Elementary School

The findings of this study strongly suggest that the University Elementary School program is more likely to produce a higher level of student performance than is the program of the public school kindergarten. However, the scope of the study is large and contains many variables. It is not possible to isolate any specific factor in either program as having a direct effect on the level of student performance. From the findings of this study, one can only speculate as to what part of the program should be expanded, reduced, or deleted to maintain or to improve the program. This study provides only a first glimpse of something which may exist. If it is to

be used to evaluate the present program or as a diagnostic tool for prescribing changes in the program, it must be followed by extensive research in which variables pointed out by this study are isolated and their affect determined.

The need for more exhaustive research into the University Elementary School program will necessitate compiling a complete description and rationale of the program, including its goals and objectives and the instructional patterns utilized in reaching them. Although there is evidence that the goals and objectives of the University Elementary School program are more clearly defined than those of the public school kindergarten, the investigator found that these objectives often lack the specificity necessary for evaluation or consistent replication. Instructional patterns in the University Elementary School program are reasonably consistent and differ markedly from those of the public school kindergarten. However, these patterns are not described in print, thus lack the specificity necessary for research and reliable program evaluation.

University Elementary School is a laboratory school which has among its main purposes the development and testing of innovative educational ideas and programs. It would seem to the writer that maximum realization of this purpose is contingent on the degree of specificity with which the program is defined and described. Without this, evaluation of the program is difficult and meaningful innovation is impossible. Another purpose of University Elementary School is the dissemination of new educational ideas, a purpose which also necessitates explicit definition of both the curriculum content

and the instructional patterns of the program.

Implications for Early Childhood Education

Throughout the study there is strong evidence of the need for specified goals and objectives in the public school kindergarten. Without them, appropriate instructional activities cannot be selected, effective instructional patterns cannot be determined, and the program's effectiveness cannot be evaluated. The investigator found a variety of activities and materials being utilized in the public school kindergarten, but due to the lack of stated objectives the activities and materials chosen were often inappropriate for the learners, implemented improperly, and lacking any form of evaluation as to their effectiveness. Thus, what might have been a good idea did not seem to improve student performance.

Once the goals and objectives have been specified, the teacher must be able to teach -- to change student behavior in a desired direction. This necessitates an understanding of sound learning theory and the posession of skills to implement that theory (Hunter, 1969a, 1969b, 1969c, 1969d). As seen in this study, the types of learning activities chosen and the instructional patterns utilized seem to indicate that kindergarten teachers are either unaware of the elements of sound learning theory or are unable to implement these elements. Discussion with the teachers seems to indicate the first. From this evidence, it would seem to the writer that a key to upgrading the performance of students in the public school kinder-

garten must involve the raising of the teachers' understanding of sound learning theory and an ability to translate this theory into effective teaching.

In recent years, there has been increased emphasis placed on early childhood education. This emphasis has motivated the federal government, state government, local school districts, and philanthropic foundations to increase the expenditures for education. As a result of this increased emphasis, class sizes have been reduced, teacher aides hired, large quantities of equipment and material purchased, courses of study written, and new organizational patterns and new programs adopted. Yet, the findings of this study show that in spite of these added expenditures and changes in school programs, there is little evidence to indicate that student performance has been affected. It is the opinion of the writer that continued support for early childhood education is contingent on the rigor built into the program. The teacher must be able to identify his specific objectives and to be held responsible for reaching those objectives.

Conditions Limiting the Extent of Legitimate Generalization

Although the findings of this study contain evidence of significant differences in student performance between the two samples, the reader is cautioned that there are conditions which limit the extent to which these results can be legitimately generalized to another population. The student population included in this

study is composed largely of children from upper middle class homes. More than eighty percent of the children come from homes where at least one parent is a professional person. Both samples of children are chosen from a list of children whose parents had applied for their admission to University Elementary School. The study was conducted during a summer session at which attendance was voluntary. These characteristics reveal a student population which comes from affluent homes where children have had material things with which to play; the attention of adults, parent or servants, to care for his needs; and the opportunity to travel and have a wide array of experiences. The degree of educational aspiration in the homes of the children involved in this study is obviously very high, another characteristic which seems to have an affect on student performance.

It must also be noted that the control group was selected entirely from children who attended kindergarten in the Los Angeles City School System. Other districts or programs may differ markedly in philosophy and practices. The evaluation of student performance is limited to three curricular areas and to very specific objectives within each of these areas. Results may not be relevant to other curricular areas or to other objectives in the same area.

Even though a study of this type is fraught with problems, the kinds of information yielded far outweigh the difficulties encountered. Examples of these difficulties include the fear of school systems to be exposed, the excessive amount of time required for conducting this type of study, and the complexity of the problem due to the number of variables. One value of information

yielded by this type of study is that it provides guidelines for the planning of educational programs. Another value is the extent to which it suggests related questions for further study.

Three important questions revealed by this study are:

1. Would these same findings hold true for students of other socio-economic backgrounds?
2. Would these same findings emerge in a study which treats other curricular areas?
3. Would the findings be changed by altering the richness of the school environment?

BIBLIOGRAPHY

Almy, Millie. Ways of Studying Children. New York: Bureau of Publications. Teachers College, Columbia University, 1959.

Bloom, Benjamin. Stability and Change in Human Characteristics. New York: John Wiley and Sons, Inc., 1964.

Buchanan, Edith. "A Raticnale for Early Childhood Education." An unpublished paper. University Elementary School, University of California at Los Angeles, 1967.

Campbell, Donald T. and Stanley, Julian C. Experimental and Quasi-Experimental Designs for Research, Chicago: Rand McNally and Company, 1963.

Flanders, Ned A. "Diagnosing and Utilizing of Social Structures in Classroom Learning. " in The Dynamics of Instructional Groups, 59th Yr. Bk. Nat. Soc. Stud. Education: 1960a, University of Chicago.

Flanders, Ned A. "Teacher Influence, Pupil Attitudes and Achievement: Final report." Unpublished U.S.O.E. Cooperative Research Project, University of Minnesota, 1960b.

Goodlad, John I., Klein, M. Frances and Associates. Behind the Classroom Door. Worthington, Ohio: Charles A. Jones Publishing Company, 1970 (in press).

Goodlad, John I. School, Curriculum, and the Individual. Waltham, Massachusetts: Blaisdell Publishing Company, 1966.

Hechinger, Fred M. (Ed.) Pre-School Education Today, Garden City, New York: Doubleday and Company, Inc., 1966.

Hess, Robert D. and Bear, Roberta M. Early Education. Chicago: Aldine Publishing Company, 1968.

Hughes, Marie M., et. al. "Assessment of the Quality of Teaching in the Elementary School: A Research Report." Unpublished U.S.O.E. Cooperative Research Project. University of Utah, 1959

Hunter, Madeline. Motivation. El Segundo, California: T.I.P. Publications, 1969a.

Hunter, Madeline. Reinforcement. El Segundo, California: T.I.P. Publications, 1969b.

Hunter, Madeline. Retention. El Segundo, California: T.I.P. Publications, 1969c.

Hunter, Madeline. Teach More - Faster. El Segundo, California: T.I.P. Publications, 1969d.

Hymes, James L. Teaching the Child Under Six. Columbus, Ohio: C. E. Merrill Publishing Company, 1968.

Kahl, Joseph A. "Educational and Occupational Aspirations of 'Common Man' Boys." Harvard Educational Review, Vol. 23 (1953) 186-203.

Klein, M. Frances. "Evaluation of Instruction: Measurement of Cognitive Behavior as Defined by the Taxonomy of Educational Objectives." 1965.

Los Angeles City Schools. Planning the Daily Program - Primary Grades. Division of Instructional Services, Publ. No. E.C. 205, 1965.

Los Angeles City Schools. Reading Developmental Skills. Division of Elementary Education, 1967a.

Los Angeles City Schools. Reading Diagnostic Approaches. Division of Elementary Education, 1967b.

McClure, Robert. "Procedures, Processess, and Products in Curriculum Development." An unpublished doctoral dissertation. University of California at Los Angeles, 1965.

Medley, M. and Mitzel, H. E. "Measuring Classroom Behavior by Systematic Observation." in N.L. Gage (Ed.), Handbook of Research on Teaching. Chicago: Ran McNally, 1963.

Patterson, June M. "Indices for Diagnosis in Early Childhood Schooling," A paper prepared for the Seventh Annual Research Roundup on Children and Youth - University of California at Los Angeles, July 18 - 22, 1965.

Popham, W. James. The Teacher - Empiricist. Los Angeles: Aegeus - Division of Tinnon-Brown Inc. 1965.

Popham, W. James. "Program Fair Evaluation-Summative Assessment of Instructional Sequences with Dissimilar Objectives." N.S.P.I. Journal Vol. VIII, No 6, 6-9 July, 1969.

Rogers, Mary M. "Child Behavior Continuum." An unpublished paper. University Elementary School, University of California at Los Angeles, 1966.

Schwertfeger, J. and Weikert, D.P. "The Nature of Preschool Benefits." Michigan Education Journal 44: 18020. 1967.

Sears, P. S. and Dowley, E. M. "Research on Teaching in the Nursery School." in N.L. Gage (Ed.), Handbook of Research on Teaching.

Shevky, Eshref and Bell, Wendell. Social Area Analysis. Stanford, California: Stanford University Press, 1955.

APPENDIX I

CURRICULUM CONTENT AREA DEFINED

Objectives and Criterion Items

PRE-READING READING READINESS READING

A. Auditory discrimination

1. To perform the actions called for by three simple directions given by the teacher.

   * Following a single oral presentation of the following set of directions the student will perform, in proper sequence the actions called for by the entire set. (Max. time: 2 min.)

     (a) Raise both hands above your head.
     (b) Turn around once.
     (c) Sit down on the floor.

2. From a series of 10 paired words given orally, to indicate verbally the five pairs which rhyme.

   * After hearing each of the following pairs of words, the student will indicate (verbally or non-verbally) whether or not the pair of words rhyme. (errors allowed: 1)

     e.g., cat - hat

     (a) way - day
         dog - log
         cat - mouse
         top - stop
         run - fast
         cake - make
         girl - woman
         boy - toy
         look - see
         doll-- baby

3. From a series of ten paired words given orally, to indicate verbally the five pairs which possess the same beginning sound.

   * After hearing each of the following pairs of words, the student will indicate (verbally or non-verbally) whether the given pair of words begin with the same beginning sound. (errors allowed: 1)

     e.g., boy - bat

(a) rat - ran
dog - top
for - farm
sat - map
not - pen

Bob - baby
see - Sam
party - birthday
table - chair
look - lake

4. From a series of ten paired words given orally, to indicate (verbally or non-verbally) the five pairs which possess the same ending sound.

* After hearing each of the following pairs of words, the student will indicate (verbally or non-verbally) whether the given pair of words have the same ending sound. (errors allowed: 1)

e.g., top - hip

(a) fast - first
call - hat
table - apple
walked - played
chair - table

then - where
oranges - garages
fat - not
mother - woman
coat - sweater

5. From a story he has just heard, to tell verbally the events of the story in proper sequence.

* After hearing the following short story, the student will verbally recall the events (3 of the 4) from the story in proper sequence.

The Beach Trip

Bill and his mother were planning for a trip to the beach. Before leaving for the beach Bill (1)fed his dog Bozo, then he (2)helped his mother carry the picnic basket to the car. When he got to the beach he (3)played with his friend Sam until it was time to go home. He was very tired and (4)fell asleep as soon as he got home.

1. fed the dog Bozo
2. helped his mother carry the picnic basket
3. played with his friend Sam
4. fell asleep

6. Given five sentences with missing noun or verb to orally give an appropriate word to complete the sentence.

* After hearing the following incomplete sentences, the student will complete the sentence by verbally adding an appropriate noun or verb. (errors allowed: 1)

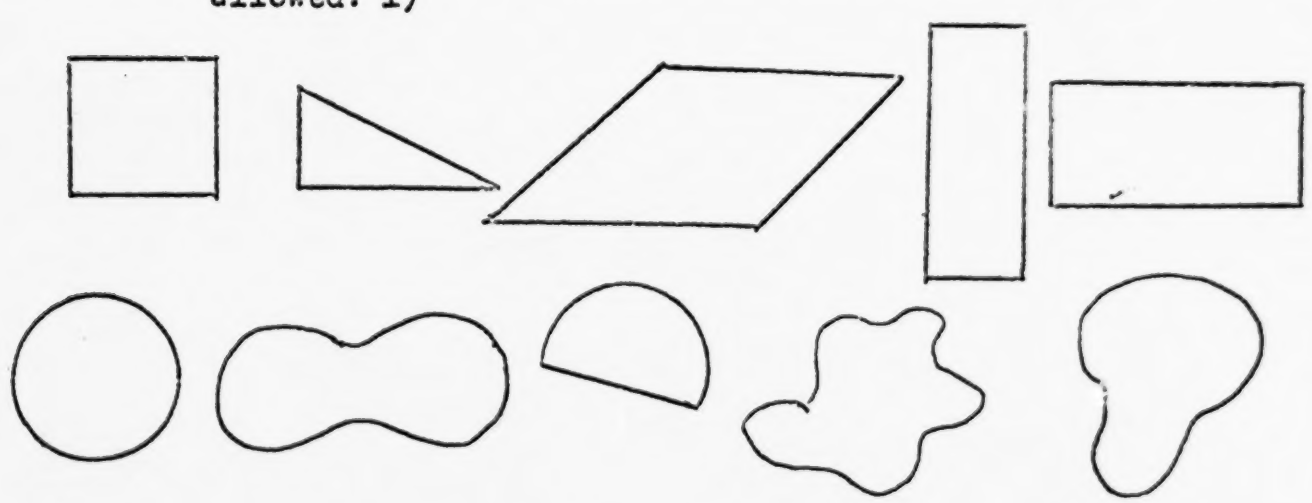
e.g., A kitten likes to drink _____.

1. My puppy likes to play with a _____.
2. The astronauts went to the _____.
3. Tommy _____ the bike fast.
4. I can _____ on the telephone.
5. I saw _____ at the zoo.

B. Visual discrimination

1. From a series of ten shapes, to pick out the five which possess a particular characteristic.

* From a series of 10 shapes (shown to him) to pick out five which possess a particular characteristic. (errors allowed: 1)



2. From a series of ten words, to point out the five which begin with the same letter.

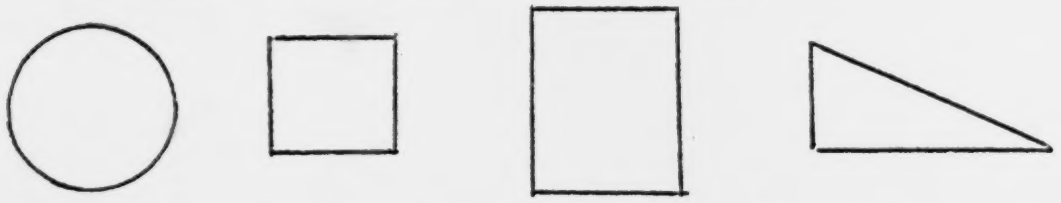
* After seeing the following ten words, the student will point out the five which begin with the same letter. (errors allowed: 0)

bird	swing	picture
cat	wagon	button
boy	begin	
baby	table	

3. Given a series of drawings of basic shapes, to verbally name

a shape which is pointed to (circle, square, rectangle, triangle).

* After seeing drawings of each of the following shapes, the student will verbally name the shape which is indicated (circle, square, rectangle, triangle). (errors allowed: 0)



4. When presented with each of the eight basic colors, to verbally name the color.

* When presented with each of the 8 basic colors to verbally name the color indicated. (errors allowed: 0)

Red, Orange, Yellow, Green, Blue, Purple, Black, Brown

5. When presented with three sticks of varying lengths, to verbally tell which is longest and which is shortest.

* When presented with 3 sticks of varying lengths, to verbally tell which is longest and which is shortest. (errors allowed:0)

6. When presented with three blocks of the same shape but varying sizes, to verbally tell which is smallest and which is largest.

* When presented with 3 blocks of the same shape, but varying in size, to verbally tell which is smallest and which is largest. (errors allowed: 0)

7. When presented with the capital letters of the alphabet in any order, to verbally call the names of letters as they are pointed out.

* When presented with the capital letters of the alphabet in any order, to verbally call the name of letters as they are pointed out. (errors allowed: 1)

8. When presented with the lower case letters of the alphabet in any order, to verbally call the names of the letters as they are pointed out.

   * When presented with the small letters of the alphabet in any order, to verbally call the names of the letters as they are given. (errors allowed: 1)

9. Given five words on a chart and a set of flash cards containing matching words, to match the flashcard words to the words on the chart.

   * Given the following five words on a chart and a set of flash cards containing matching words, the student will match the flashcard words to the words on the chart. (errors allowed: 0)

     baby
     cake
     dog
     jump
     make

10. Given a list containing the given names of the children in his class, to point out his own name.

    * Given a list containing the given names of the children in the study, the student will point out his own name.

C. Fine motor skills

1. To toss three beanbags into a three-foot circle from a distance of five feet.

   * Can toss 3 of 5 beanbags into a three-foot circle from a distance of 5 feet.

2. To walk a $3\frac{1}{2}$ inch balance beam for a distance of six feet.

   * Can walk a $3\frac{1}{2}$ inch balance beam for a distance of six feet.

3. To write his given name using manuscript letters -- both

capital and small letters.

* The student will write his given name using manuscript letters -- both capital and small letters (e.g., Thomas).

4. When a ball is rolled or bounced to him, to follow it with his eyes and to move his body in front of it in preparation to catch it.

* Can move to the right or left a distance of at least 2 feet and stop a ball which is rolled to him from a distance of 20 feet. (3 of 4 times)

* Can move in front of, and stop a ball which is bounced within 2 feet of him from a distance of 20 feet. (3 of 4 times)

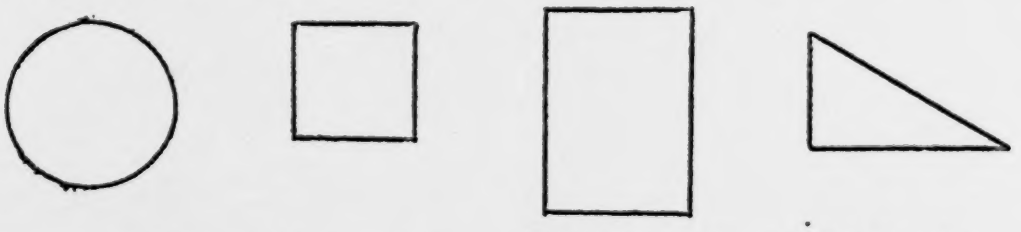
D. Oral vocabulary skills

1. To dictate sentences or a story to the teacher.

* To dictate 2 complete sentences or a story containing at least 2 complete sentences -- to be written by the teacher or observers. (5 min.)

2. When presented with a series of simple shapes (triangle, square, rectangle, circle) to verbally name the shapes as they are pointed out.

* After seeing drawings of each of the following shapes, the student will verbally name the shape which is indicated (circle, square, rectangle, triangle) (errors allowed: 0)



3. When presented with a series containing the eight basic colors, to verbally name each of the colors.

* When presented with each of the eight basic colors, to verbally name the color indicated. (errors allowed: 0)

Red, Orange, Yellow, Green, Blue, Purple,
Black, Brown

4. When presented with a series of sticks of varying lengths and objects of varying sizes, he will verbally indicate which are longest, shortest, shorter, longer, largest, smallest, larger, and smaller when they are pointed out.

   * When presented with three sticks of varying lengths, to verbally tell which is longest and which is shortest. (errors allowed: 0)

   * When presented with 3 blocks of the same shape, but varying in size, to verbally tell which is smallest and which is largest. (errors allowed: 0)

5. As he explores various textures, to describe verbally how each feels.

   * When presented with the following items, the learner will use at least two words to describe how the item feels (not including nice, good, O.K., bad)

     sandpaper (e.g., rough, scratchy)
     (dry) rubber sponge (e.g., soft, squishy, bumpy)
     fur (e.g., soft, fuzzy)

6. Can describe verbally how something looks.

   * When presented with the following items, to use at least two words to describe how the item looks (not including nice, good, O.K., bad, etc.)

     blue rubber sponge
     red drinking straw
     hollow ball (practice ball)

7. Can ask a question of the teacher or another child.

   * Asks a question of another child. (frequency)

   * Requests help or information from the teacher. (frequency)

8. Can participate in group discussion.

   * Participates (vol.) in group discussion. (frequency)

9. Can verbally express his thoughts to another person.

   * Engages in conversation with teacher (not question and answer). (frequency)

E. Mechanical Skills

1. Can point out the beginning and ending of words and the beginning and ending of lines of print (left to right progression)

   * Given the following individual word and a sentence, the learner will point out the beginning and ending of each.

S T O P

The boy plays ball with his dog.

2. Can point out the front of a book, the back of a book, the top of a book, the bottom of a book.

   * Given a book, the learner will point out the front, back, top, and bottom. (errors allowed: 0)

3. When presented with a book, to indicate by physically finding the "next" page, the "first" page, turn "back" one page, the "last" page.

   * Given a book, the learner will physically perform the following as the directions are given. (errors allowed: 0)

     (a) Find the "first" page.
     (b) Turn to the "next" page.
     (c) Turn to the "last" page.
     (d) Turn "back" one page.

F. Recall and Comprehension

1. From a story just read to him, can verbally recall the events of the story in proper sequence.

* After hearing the following short story, the student will verbally recall the events (at least three) from the story in proper sequence.

"The Beach Trip"

Bill and his mother were planning for a trip to the beach. Before leaving for the beach, Bill fed his dog Bozo, then he helped his mother carry the picnic basket to the car. When he got to the beach he played with his friend Sam until it was time to go home. He was very tired and fell asleep as soon as he got home.

2. Given five sentences with missing noun or verb, can verbally give an appropriate noun or verb to complete the sentence.

* After hearing the following incomplete sentences, the student will complete the sentence by verbally adding an appropriate noun or verb. (errors allowed: 1)

e.g., A kitten likes to drink _____.

1. My puppy likes to play with a _____.
2. The astronauts went to the _____.
3. Tommy _____ the bike fast.
4. I can _____ on the telephone.
5. I saw a _____ at the zoo.

G. Attitude toward language related activities.

1. To choose a language related activity when other activities are available to him.

* Selects (vol.) a language or math activity (writing, alphabet games, dictation, listening center, etc. (frequency)

SOCIAL SKILLS

A. Works and plays on a cooperative level with another child.

1. Can voluntarily join another child or other children in a

play or work activity.

* Joins another child or other children in play or work activity. (frequency)

2. Can initiate a play or work activity with another child or with other children.

* Initiates a play or work activity with another child or other children. (frequency)

3. Can incorporate the ideas and suggestions of another child or other children in a play or work activity.

* Incorporates an idea or suggestion of another child or other children into a play or work situation. (frequency)

4. Can contribute ideas and suggestions to the work or play situation in which he is involved with other children.

* Contributes an idea or suggestion to a play or work situation in which he is involved with another child or other children. (frequency)

5. Can settle differences with other children by talking rather than hitting, grabbing, tattling.

* Talks to another child to resolve a conflict (as opposed to hitting, pushing, tattling) (frequency)

6. Can verbalize his wishes to another child or children.

e.g., "Can I have a turn?", "Don't do that."

* Verbalizes his wishes to another child. ("Don't do that.", "Can I have a turn?" (frequency)

7. Can defend himself physically or seek help from the teacher when attacked by another child.

* Defends self physically when attacked by another child. (frequency)

* Seeks help from teacher when attacked by another child. (frequency)

8. Can persist at a task or persue his own interests regardless of the pressures from another child or other children.

   * Persists at a task of his choosing while being pressured by another child to choose another activity. (frequency)

9. Can share the materials and equipment which belongs to the group.

   * Procures the material which he needs for a project. (frequency)

   * Asks for a group material when he needs it. (frequency)

   * Takes a group material when he needs it. (frequency)

   * Shares (vol.) a group material with another child or other children. (frequency)

10. To physically evidence care in using materials and equipment which belongs to the group. (Not included in this study.)

   * Destroys or wastes group material or equipment. (frequency)

11. To return group materials and equipment to the designated areas when he is finished with them.

   * Returns a group material or piece of equipment to the designated area when he is finished with it (vol.). (frequency)

   * Returns materials and equipment to proper storage area and disposes of scraps when finished with an activity. -- 2 of 3 times

12. Can verbally express agreement or disagreement with the ideas of another child or other children.

   * Verbally expresses an agreement or disagreement with another child or with other children. (frequency)

B. Utilizes adults as sources of information, support, guidance, and control.

1. Can defend himself physically or seek help from the teacher when attacked by another child.

   * Defends self physically when attacked by another child. (frequency)

   * Seeks help from teacher when attacked by another child. (frequency)

2. Can verbally ask a teacher the reasons for a rule, procedure, or answer.

   * Questions the reason for a group rule, procedure or answer. (frequency)

3. To verbally express to the teacher, dislike for a rule, procedure or answer.

   * Expresses dislike for a group rule, procedure, or answer verbally or non-verbally (frequency)

4. Can verbally request help or information from a teacher.

   * Requests help or information from the teacher. (frequency)

5. Can wait for the help he has requested.

   * Waits for help he has requested. (frequency)

6. Can engage in conversation with a teacher.

   * Engages in conversation with teacher (not question and answer) (Frequency)

7. Can physically respond to the help, information, or support offered by a teacher.

   * Responds with the appropriate physical activity to the help, information, or support offered by an adult. (frequency)

C. Participates as a member of the total group.

1. Can voluntarily join other children in a play or work activity.

* Joins another child or other children in play or work activity. (frequency)

2. Can incorporate the ideas and suggestions of other children in a play or work activity.

   * Incorporates an idea or suggestion of another child or other children into a play or work situation. (frequency)

3. Can contribute ideas and suggestions to a work or play situation in which he is involved with other children.

   * Contributes an idea or suggestion to a play or work situation in which he is involved with another child or other children. (frequency)

4. Can settle differences with other children by talking rather than hitting, grabbing, or tattling.

   * Talks to another child to resolve a conflict (as opposed to hitting, pushing, tattling). (frequency)

5. Can verbalize his wishes to other children -- e.g., "Can I have a turn?", "Don't do that."

   * Verbalizes his wishes to another child ("Don't do that.", "Can I have a turn?") (frequency)

6. Can persist at a task or persue his own interests regardless of the pressures of other children.

   * Persists at task of his choosing while being pressured by another child to choose another activity. (frequency)

7. To abide by the rules of the classroom or playground.

   * Breaks a school rule: in gully without teacher, in creek without teacher, bikes on patio, throwing anything, etc. (frequency) (Not included in this study.)

8. Can share the materials and equipment which belongs to the group.

   * Shares (vol.) a group material with another child or other children. (frequency)

* Takes a group material not needed for his project. (frequency) (Not included in this study.)

9. To physically evidence care in using materials and equipment which belongs to the group.

   * Destroys or wastes group material or equipment. (frequency)

10. Returns group materials and equipment to the designated areas when he is finished with them.

   * Returns a group material or piece of equipment to the designated area when he is finished with it (vol.). (frequency)

11. Can share the time or space allotted to the group.

   * Raises hand and waits for recognition before speaking out in group discussion. (frequency)

   * Interrups another child during group discussion. (frequency) (Not included in this study.)

12. Can demand his share of the time or space allotted to the group.

   * Asks another child to move out of his way. (frequency)

13. Can verbally contribute to a group discussion.

   * Participates (vol.) in group discussion. (frequency)

14. Can physically procure or ask for the materials, equipment, required for his participation in a group activity.

   * Procures the material which he needs for a project. (frequency)

   * Asks for a group material when he needs it. (frequency)

   * Takes a group material when he needs it. (frequency)

15. Can verbally express agreement or disagreement with the ideas of another child or other children.

* Verbally expresses an agreement or disagreement with another child or with other children. (frequency)

SELF-RELATED SKILLS

A. Evidences independence in caring for his own physical needs and responsibilities.

1. Can dress himself.

   * Can put on and take off jacket or sweater - 3 min.

   * Can put on sox and shoes (except tying) - 5 min.

   * Can button three one-inch buttons - 2 min.

2. Cares for his own clothing.

   * Removes belongings from locker before going home. - 2 of 3 times

3. Writes his name on materials he wishes to keep.

   * Writes his name on materials he wishes to keep. - 2 of 3 times.

4. Returns to the classroom and begins a proper activity when a signal is given.

   * Returns to the classroom (2 min.) at the sound of an audible signal. - 2 times

   * Upon returning to the classroom he chooses an activity area which is provided in the classroom. - 2 min.

5. Procures the materials needed to carry out an activity or idea he has chosen.

   * Moves to the area and procures the materials or equipment necessary to begin work. - 2 of 3 times.

6. Remains with an activity until it is complete or for a

reasonable length of time.

* Remains with the chosen activity for a reasonable length of time (10 min.). - 2 of 3 times

* Leaves project incomplete. (frequency)

7. Cleans up his materials when finished with an activity.

* Returns materials and equipment to proper storage area and disposes of scraps when finished with an activity. - 2 times

8. Demands his share of group materials or space.

* Asks for a group material when he needs it. (frequency)

* Takes a group material when he needs it. (frequency)

* Asks another child to move out of his way. (frequency)

9. Makes use of group materials

* Utilizes group materials. (frequency)

B. Evidences independence in relating to other persons.

1. Can initiate a play or work activity with another child or other children.

* Initiates a play or work activity with another child or other children. (frequency)

2. Can contribute ideas and suggestions to a work or play activity in which he is involved with other children.

* Contributes an idea or suggestion to a play or work situation in which he is involved with another child or other children. (frequency)

3. Can verbally express agreement or disagreement with the ideas of another child or other children.

* Verbally expresses an agreement or disagreement with another child or with other children. (frequency)

4. Can verbalize his wishes to another child or other children.

e.g., "Can I have a turn?", "Don't do that."

* Verbalizes his wishes to another child ("Don't do that.", "Can I have a turn?" (frequency)

5. Can defend himself physically or seek help from the teacher when attacked by another child.

* Defends self physically when attacked by another child. (frequency)

* Seeks help from teacher when attacked by another child. (frequency)

6. Can persist at a task or persue his own interests regardless of the pressures of another child or other children.

* Persists at a task of his choosing while being pressured by another child to choose another activity. (frequency)

7. Can ask a teacher the reasons for a rule, procedure, or answer.

* Questions the reason for a group rule, procedure, or answer. (frequency)

8. To express dislike for a rule, procedure, or answer.

* Expresses dislike for a group rule, procedure, or answer verbally or non-verbally. (frequency)

9. Can request help or information from a teacher.

* Requests help or information from the teacher. (frequency)

C. <u>Evidences an awareness of his own body and its functions in the social and physical world</u>.

1. To jump from a height of three feet.

* Can jump from a height of 3 feet landing on both feet and using knees to absorb the shock.

2. To climb to a height of at least six feet.

* Can climb a ladder to a height of six feet. - 2 min.

3. To touch his body parts as the name of that part is given.

   * Can point to 9 of the following body parts as that part is named.

ankle	elbow	knee	chest
hip	neck	chin	
shoulder	wrist	heel	

4. To push a weight of at least 20 pounds along a level floor.

   * Can push a 20 lb. weight across a level floor for a distance of 10 feet.

5. To lift a weight of at least 15 pounds and carry it.

   * Can lift a weight of 15 lbs. to waist height and carry it a distance of 10 feet.

6. To run with free and coordinated body movements.

   * Can run free for a distance of 50 feet using opposing arm and leg movements.

7. Can throw an object and hit a target.

   * Can toss 3 of 5 beanbags into a three-foot circle from a distance of 5 feet.

8. Can walk on a $3\frac{1}{2}$ inch balance beam.

   * Can walk a $3\frac{1}{2}$ inch balance beam for a distance of 6 feet.

9. Can track a ball which is rolled to or near him.

   * Can move to the right or left of a distance of at least 2 feet in preparation to stop a ball which is rolled to him from a distance of 20 feet. - 3 of 4 times.

10. Can track a ball which is bounced to or near him.

    * Can move in front of, and prepare to catch, a ball which is bounced within 2 feet of him.

D. Evidences an awareness of his feelings. Can accept them, control them, and express them in appropriate ways.

1. Can verbally or physically express his feelings in the appropriate context -- cry, frown, grimace when hurt; laugh, smile, etc. when pleased.

   * Expresses affect appropriate to the context by non-verbal means -- e.g., facial expression, posture, vocal inflection. (frequency)

2. To verbally and physically express his feelings in ways which are not destructive to himself.

   * Unable to control affect -- e.g., temper tantrum, hysteria, hitting. (frequency)

APPENDIX II

STUDENT PERFORMANCE SURVEY

OBSERVATION SCHEDULE KEY

1. Joins another child or other children in a play or work activity.

2. Initiates a play or work activity with another child or other children.

3. Incorporates an idea or suggestion of another child or other children into a play or work situation.

4. Contributes an idea or suggestion to a play or work situation in which he is involved with another child or other children.

5. Verbally expresses an agreement or disagreement with another child or with other children.

6. Talks to another child to resolve a conflict (as opposed to hitting, pushing, tattling).

7. Verbalizes his wishes to another child ("Don't do that.", "Can I have a turn?").

8. Defends self physically when attacked by another child.

9. Seeks help from the teacher when attacked by another child.

10. Procures the materials which he needs for a project.

11. Persists at a task of his choosing while being pressured by another child to choose another activity.

12. Asks for a group material when he needs it.

13. Takes a group material when he needs it.

14. Shares (voluntarily) a group material with another child or other children.

15. Destroys or wastes group material or equipment.

16. Utilizes group material.

17. Takes group material not needed for his project.

18. Leaves project incomplete.

19. Asks another child to move out of his way.

20. Returns a group material or piece of equipment to the designated area when he is finished with it (voluntarily).

21. Questions the reasoning for a group rule, procedure, or answer.

22. Expresses dislike for a group rule, procedure, or answer verbally or non-verbally.

23. Breaks a school rule: in gully without a teacher, in creek without a teacher, bikes on patio, throwing anything, and so forth.

24. Requests help or information from the teacher.

25. Waits for help he has requested.

26. Responds with the appropriate physical act to the help, information, or support offered by an adult.

27. Engages in conversation with a teacher (not questions and answers).

28. Participates (voluntarily) in group discussion.

29. Raises his hand and waits for recognition before speaking out in a group discussion.

30. Interrups another child during a group discussion.

31. Asks a question of another child.

32. Selects (voluntarily) a language or math activity (writing, alphabet games, dictation, listening center, and so forth).

33. Selects (voluntarily) a non-language activity (clay, blocks, and so forth).

34. Expresses affect appropriate to the context by non-verbal means--e.g., facial expressions, posture, vocal inflection.

35. Unable to control affect -- e.g., temper tantrum, hysteria, hitting.

OBSERVATION SCHEDULE

1.	Joins anoth. chld. or oth. chldn. in pl. or wk. act.					
2.	Initiates a pl. or wk. act. w. anoth. chld. or oth. chldn.					
3.	Incorporates an idea or sug. of anoth. chld. or oth. chldn. into a pl. or wk. sit.					
4.	Contributes an idea or sug. to a pl. or wk. sit. in which he is involv. w. anoth. chld. or oth. chldn.					
5.	Verbally expres. an agreemt. or disagreemt. w. anoth. chld. or w. oth. chldn.					
6.	Talks to anoth. chld. to resolve a conflict (as opp. to hit., push., tattl.)					
7.	Verbalizes his wishes to anoth. chld. ("Don't do that.", "Can I have a turn?")					
8.	Defends self phys. when att'k by anoth. chld.					
9.	Seeks help from T. when att'k by anoth. chld.					
10.	Procures the mat. which he needs for a proj.					
11.	Persists at task of his choos. while being press. by anoth. chld. to choos. anoth. act.					
12.	Asks for a grp. mat. when he needs it.					
13.	Takes a grp. mat. when he needs it.					
14.	Shares (vol.) a grp. mat. w. anoth. chld. or oth. chldn.					
15.	Destroys or wastes grp. mat. or equip.					
16.	Util. grp. mat.					
17.	Takes grp. mat. not needed for his proj.					
18.	Leaves proj. inc.					
19.	Asks anoth. chdl. to move out of his way.					

OBSERVATION SCHEDULE (Continued)

21.	Quest. the reas. for a grp. rul, proc. or ans.					
22.	Expresses dislike for a grp. rul, proc. or ans. verbally or non-verbally					
23.	Breaks a school rul: in gul. w/o T., in Cr. w/o T., bikes on pat., throw. anything, etc.					
24.	Requests hlp. or info. from the T.					
25.	Waits for hlp. he has req.					
26.	Responds w. the appro. phy. act. to the hlp., info., or support offer. by an adult.					
27.	Engages in conversa. w. T. (not Quest. & ans.)					
28.	Participates (vol.) in grp. discuss.					
29.	Raises hand and waits for recog. before speak. out in grp. discuss.					
30.	Interrups anoth. chld. dur. grp. discuss.					
31.	Asks a quest. of anoth. chld.					
32.	Selects (vol.) a lang. or math act. (writ., alph. games, dictation, listen. center)					
33.	Selects (vol.) an act which is not lang. or math related (art, clay, blks, etc.)					
34.	Expresses aff. appro. to the context by non-verb. means -- e.g., facial exp., post., vocal inflec.					
35.	Unable to cont'l affect -- e.g., temp. tantrum, hysteria, hit.					

CRITERION ITEMS (Observation)

A.	Evidences independence in caring for his own physical needs.					
1.	Can put on and take off jacket or sweater - 3 min.					
2.	Can put on sox and shoes (exc. tying) - 5 min.					
3.	Can button three one-inch buttons - 2 min.					
4.	Removes belongings from locker before going home - 2 of 3 times					
5.	Writes his name on materials he wishes to keep - 2 of 3 times					
6.	Returns to the classroom (2 min.) at the sound of an audible signal - 2 times					
7.	Upon returning to the classroom he chooses an activity area which is provided in the classroom (2 min.)					
8.	Moves to the area and procures the materials or equipment necessary to begin work					
9.	Remains with the chosen activity for a reasonable length of time (10 min.)					
10.	Returns materials and equipment to proper storage area and disposes of scraps when finished with an activity -- 2 times					
B.	Evidences an awareness of his own body and its functions in the social and physical world.					
1.	Can point to 9 of the following body parts as that part is named. ankle elbow knee chest hip neck chin shoulder wrist heel					
2.	Can climb a ladder to a height of 6 feet. -- 2 min.					
3.	Can jump from a height of 3 feet.					

CRITERION ITEMS (Continued)

4.	Can push a 20 lb. weight across a level floor for a distance of 10'.					
5.	Can lift a weight of 15 lbs. to waist height and carry it a distance of 10'.					
6.	Can run a distance of 50' using opposing arm and leg movements.					
C.	Gross motor skills					
1.	Can toss 3 of 5 beanbags into a three foot circle from a distance of 5'.					
2.	Can walk a 3½ inch balance beam for a distance of 6'.					
3.	Can move to the right or left of a distance of at least 2' in preparation to stop a ball which is rolled to him from a distance of 20'.					
4.	Can move in front of, and prepare to catch, a ball which is bounced within 2' of him.					

CRITERION ITEMS

A. Auditory discrimination

1. Following a single oral presentation of the following set of directions, the student will perform, in proper sequence, the actions called for by the entire set. (Max. time: 2 min.)

   (a) Raise both hands above your head.
   (b) Turn around once.
   (c) Sit down on the floor.

2. After hearing each of the following pairs of words, the student will indicate (verbally or non-verbally) whether or not the pair of words rhyme. (errors allowed:1)

   e.g., cat - hat

   (a) way - day
   dog - log
   cat - mouse
   top - stop
   run - fast
   cake - make
   girl - woman
   boy - toy
   look - see
   doll - baby

3. After hearing each of the following pairs of words, the student will indicate (verbally or non-verbally) whether the given pair of words begin with the same beginning sound. (errors allowed: 1)

   e.g., boy - bat

   (a) rat - ran
   dog - top
   for - farm
   sat - map
   not - pen
   Bob - baby
   see - Sam
   party - birthday
   table - chair
   look - lake

4. After hearing each of the following pairs of words, the student will indicate (verbally or non-verbally) whether the given pair of words have the same ending sound. (errors allowed: 1)

   e.g., top - hip

   (a) fast - first
   call - hat
   table - apple
   walked - played
   chair - table
   then - where
   oranges - garages
   fat - not
   mother - woman
   coat - sweater

5. After hearing the following short story, the student will verbally recall the events (3 of the 4) from the story in proper sequence.

The Beach Trip

Bill and his mother were planning for a trip to the beach. Before leaving for the beach Bill (1)fed his dog, Bozo, then he (2)helped his mother carry the picnic basket to the car. When he got to the beach, he (3)played with his friend Sam until it was time to go home. He was very tired and (4)fell asleep as soon as he got home.

1. fed the dog Bozo
2. helped his mother carry the picnic basket
3. played with his friend Sam
4. fell asleep

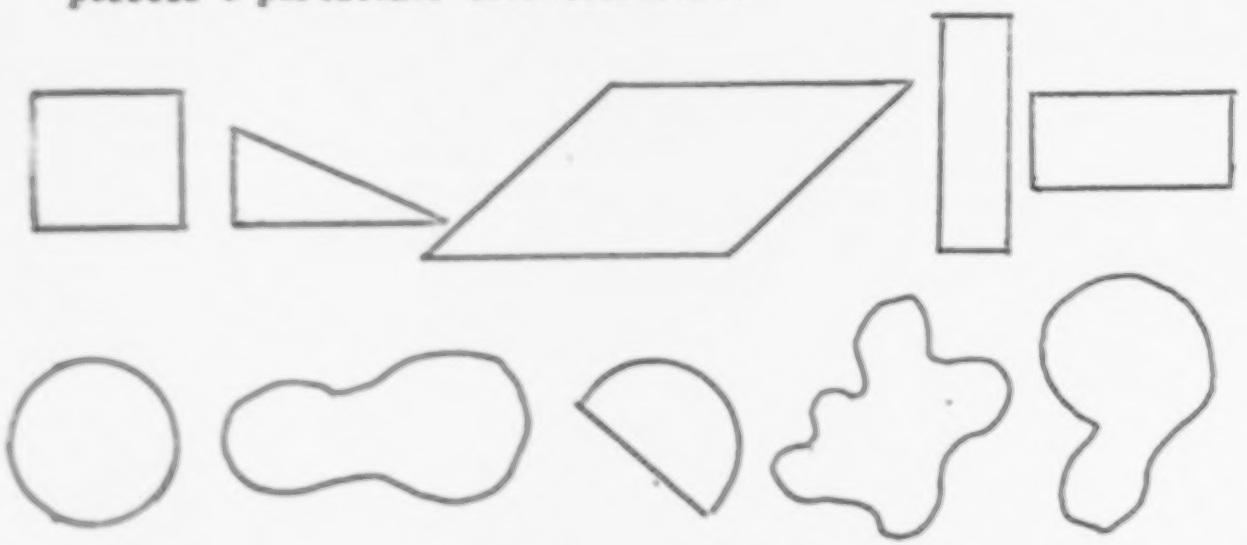
6. After hearing the following incomplete sentences, the student will complete the sentence by verbally adding an appropriate noun or verb.

e.g., A kitten likes to drink ____(milk)____.

(a) My puppy likes to play with a _____.
(b) The astronauts went to the _____.
(c) Tommy _____ the bike fast.
(d) I can _____ on the telephone.
(e) I saw _____ at the zoo.

B. Visual discrimination

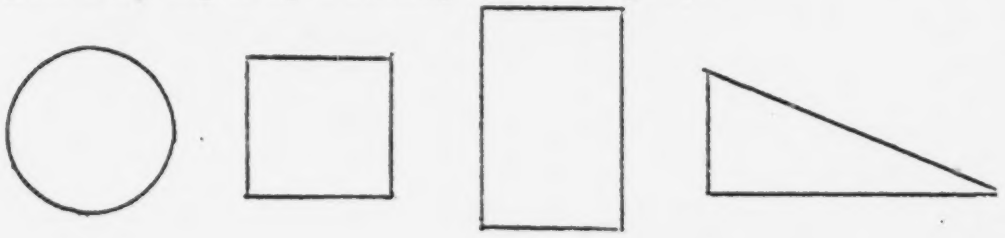
1. From a series of 10 shapes (shown to him) to pick out 5 which possess a particular characteristic.



2. After seeing the following 10 words, the student will point out the 5 which begin with the same letter.

bird	wagon
cat	begin
boy	table
baby	picture
swing	button

3. After seeing drawings of each of the following shapes, the student will verbally name the shape which is indicated (circle, square, rectangle, triangle).



4. When presented with each of the 8 basic colors, to verbally name the color indicated.

Red, Orange, Yellow, Green, Blue, Purple, Black, Brown

5. When presented with 3 sticks of varying lengths, to verbally tell which is <u>longest</u> and which is <u>shortest</u>.

6. When presented with 3 blocks of the same shape, but varying in size, to verbally tell which is <u>smallest</u> and which is <u>largest</u>.

7. When presented with the capital letters of the alphabet in any order, to verbally call the name of letters as they are pointed out. (errors allowed: 1)

8. When presented with the small letters of the alphabet in any order, to verbally call the names of the letters as they are given. (errors allowed: 1)

9. Given 5 words on a chart and a set of flash cards containing matching words, the student will match the flashcard words to the words on the chart.

baby
cake
dog
jump
make

10. Given a list containing the given names of the children in his class, the student will point out his own name.

C. Fine motor

1. The student will write his given name using manuscript letters -- both capital and small letters. (e.g., Thomas)

D. Oral vocabulary

1. To dictate 2 complete sentences or a story containing at least 2 complete sentences -- to be written by the teacher or observer. (5 min.)

2. When presented with the following items, the learner will use at least two words to describe how the item feels (not including nice, good, O.K., bad).

   sandpaper (e.g., rough, scratchy)
   rubber sponge (dry) (e.g., soft, squishy, bumpy)
   fur (e.g., soft, fuzzy)

3. When presented with the following items, to use at least two words to describe how the item looks (not including nice, good, O.K., bad, etc.)

   blue rubber sponge
   red drinking straw
   hollow ball (practice ball)

E. Mechanical skills

1. Given the following individual word and a sentence, the learner will point out the beginning and ending of each.

   S T O P
   The boy plays ball with his dog.

2. Given a book, the learner will point out the front, back, top, and bottom.

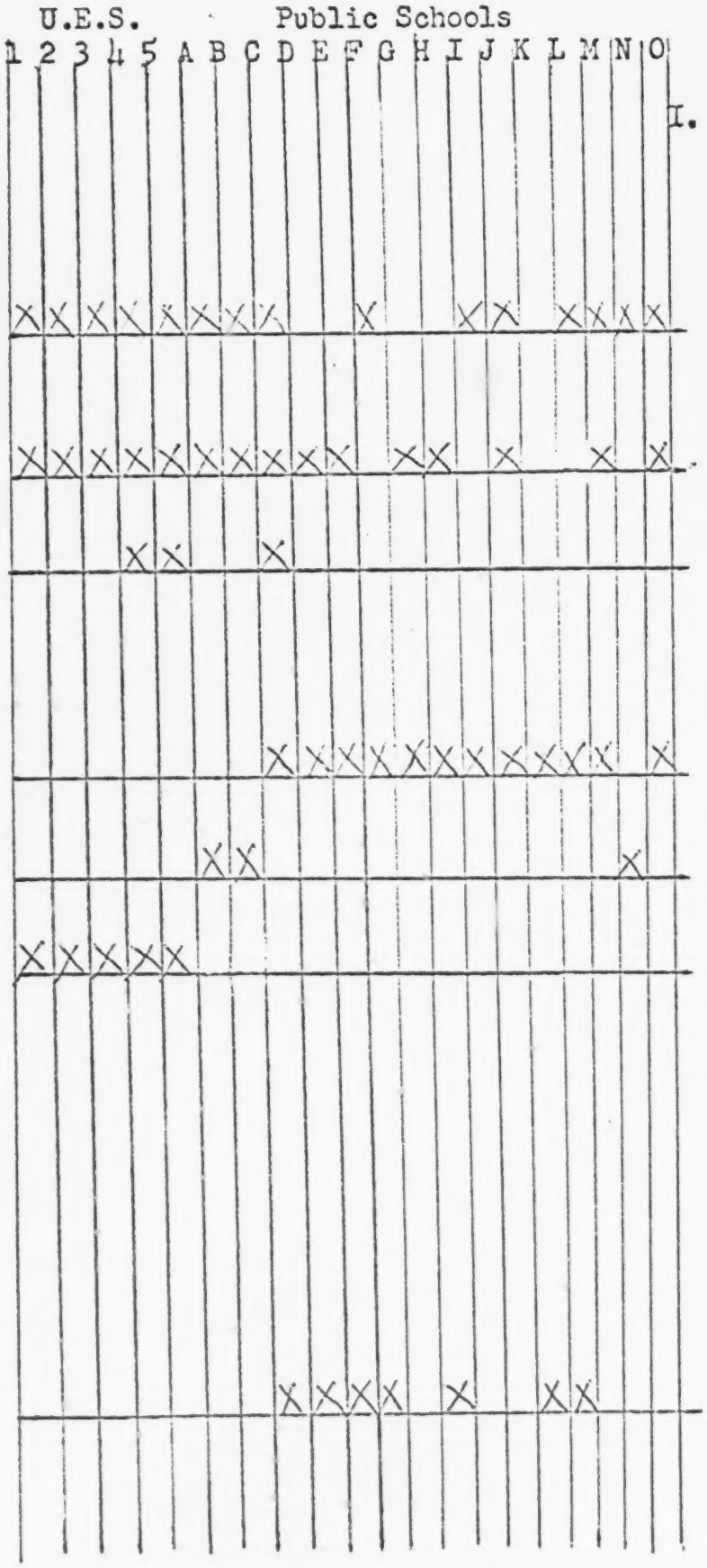
3. Given a book, the learner will physically perform the following as the directions are given.

   (a) Find the "first" page.
   (b) Turn to the "next" page.
   (c) Turn to the "last" page.
   (d) Turn "back" one page.

APPENDIX III

EDUCATIONAL PROGRAM SURVEY

Checklist of Classroom
Observational Categories



I. Curriculum Content

A. Sources of Curriculum decisions

1. Teacher's experience and background

2. District or school publications, or guide

3. Other books, publications, etc.

B. Existence and specificity of aims and objectives

1. No evidence of aims or objectives

2. Very general aims (evident or voiced)

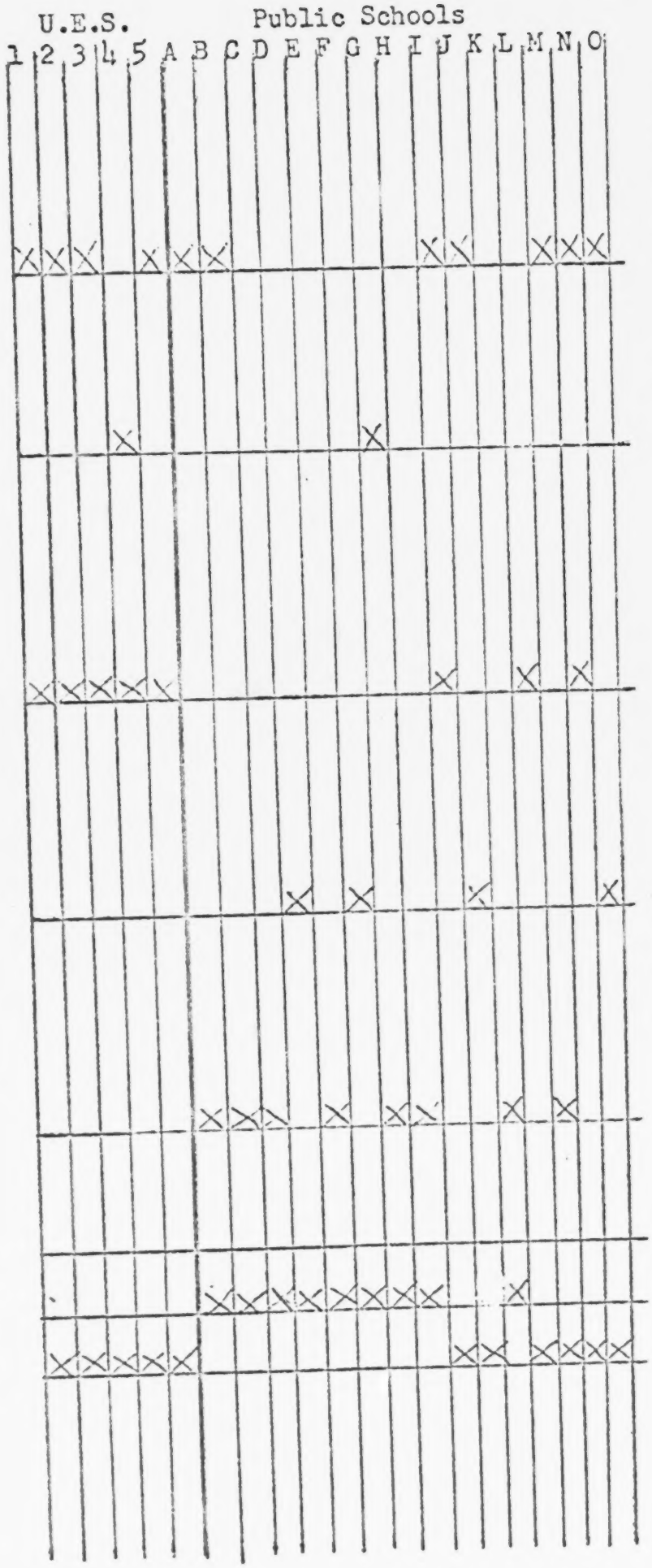
3. Clearly defined aims and objectives

C. Content areas emphasized

1. Pre-reading, reading readiness, reading

Large group instruction

Heavy emphasis - scheduled regularly for adequate periods of time (at least 10 min.) in addition to reading story to students



Moderate emphasis scheduled regularly for short periods of time (less than 10 min.); scheduled irregularly

Little or no emphasis- not scheduled; scheduled irregularly for short periods of time (less than 10 min.)

Heavy emphasis- activities and materials provided and available on a regularly scheduled basis; students usually involved

Moderate emphasis- activities, materials provided and/or available occasionally; students occasionally involved

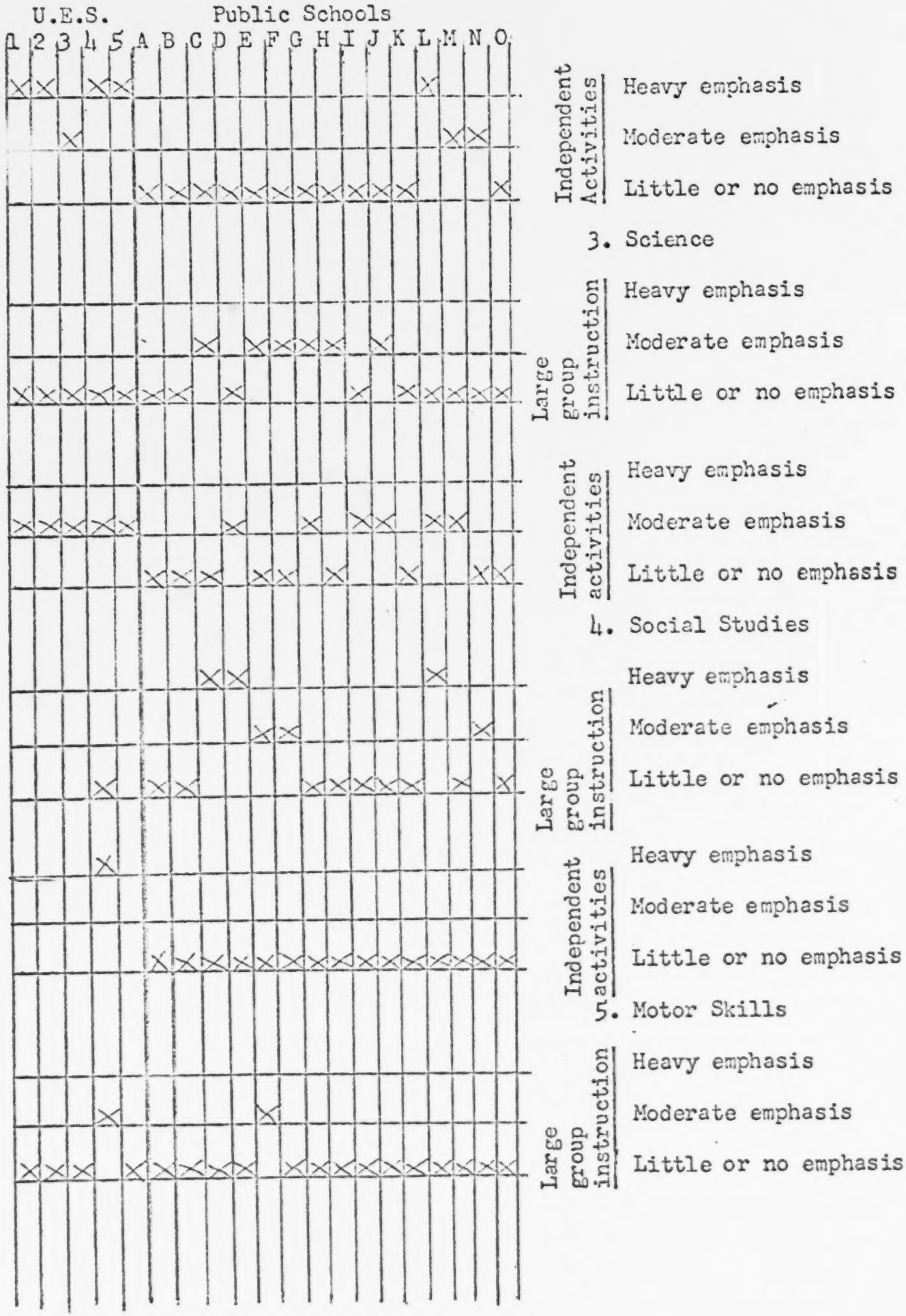
Little or no emphasis- activities and materials seldom or never provided and/or available; students seldom or never involved.

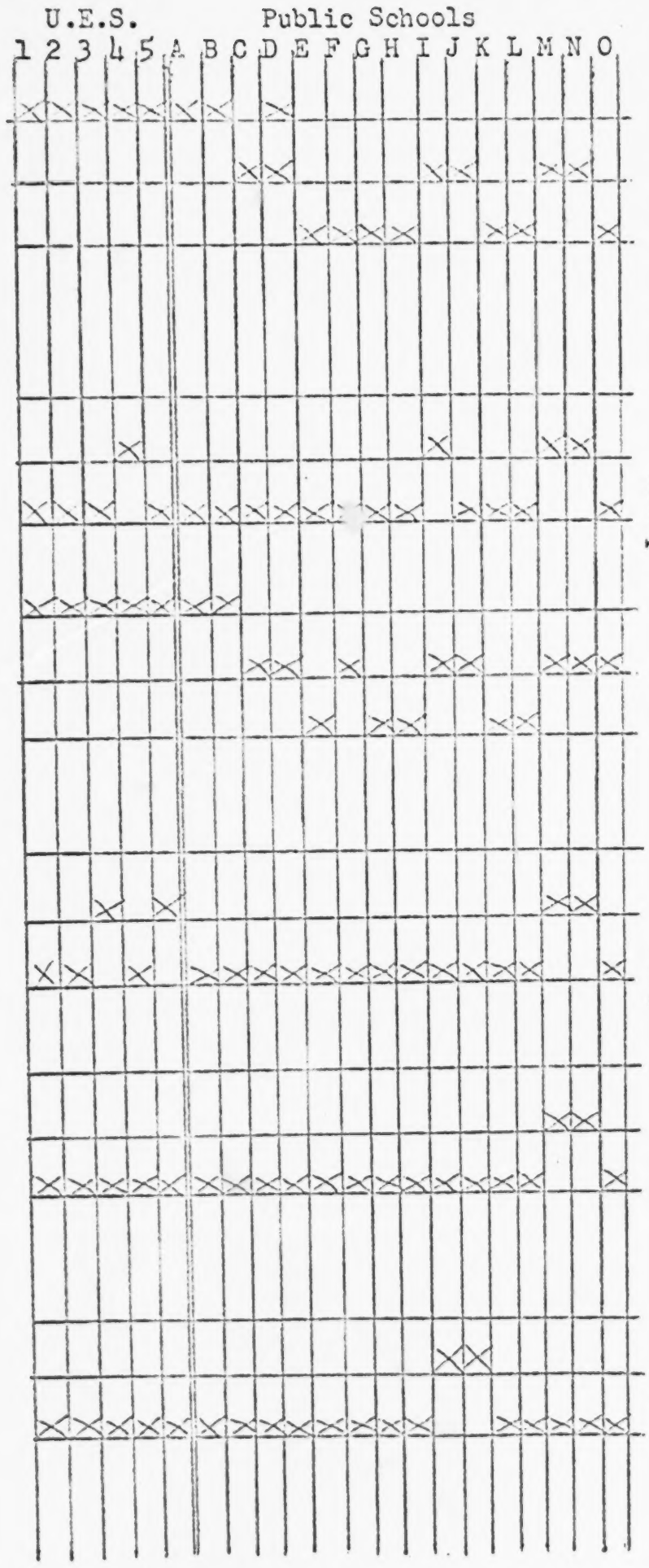
2. Mathematics

Heavy emphasis

Moderate emphasis

Little or no emphasis


U.E.S.
Public Schools
1 2 3 4 5 A B C D E F G H I J K L M N O
Independent Activities
Heavy emphasis
Moderate emphasis
Little or no emphasis
3. Science
Large group instruction
Heavy emphasis
Moderate emphasis
Little or no emphasis
Independent activities
Heavy emphasis
Moderate emphasis
Little or no emphasis
4. Social Studies
Large group instruction
Heavy emphasis
Moderate emphasis
Little or no emphasis
Independent activities
Heavy emphasis
Moderate emphasis
Little or no emphasis
5. Motor Skills
Large group instruction
Heavy emphasis
Moderate emphasis
Little or no emphasis



Independent activities
- Heavy emphasis
- Moderate emphasis
- Little or no emphasis

6. Oral language and communication

Large group instruction
- Heavy emphasis
- Moderate emphasis
- Little or no emphasis

Independent activities
- Heavy emphasis
- Moderate emphasis
- Little or no emphasis

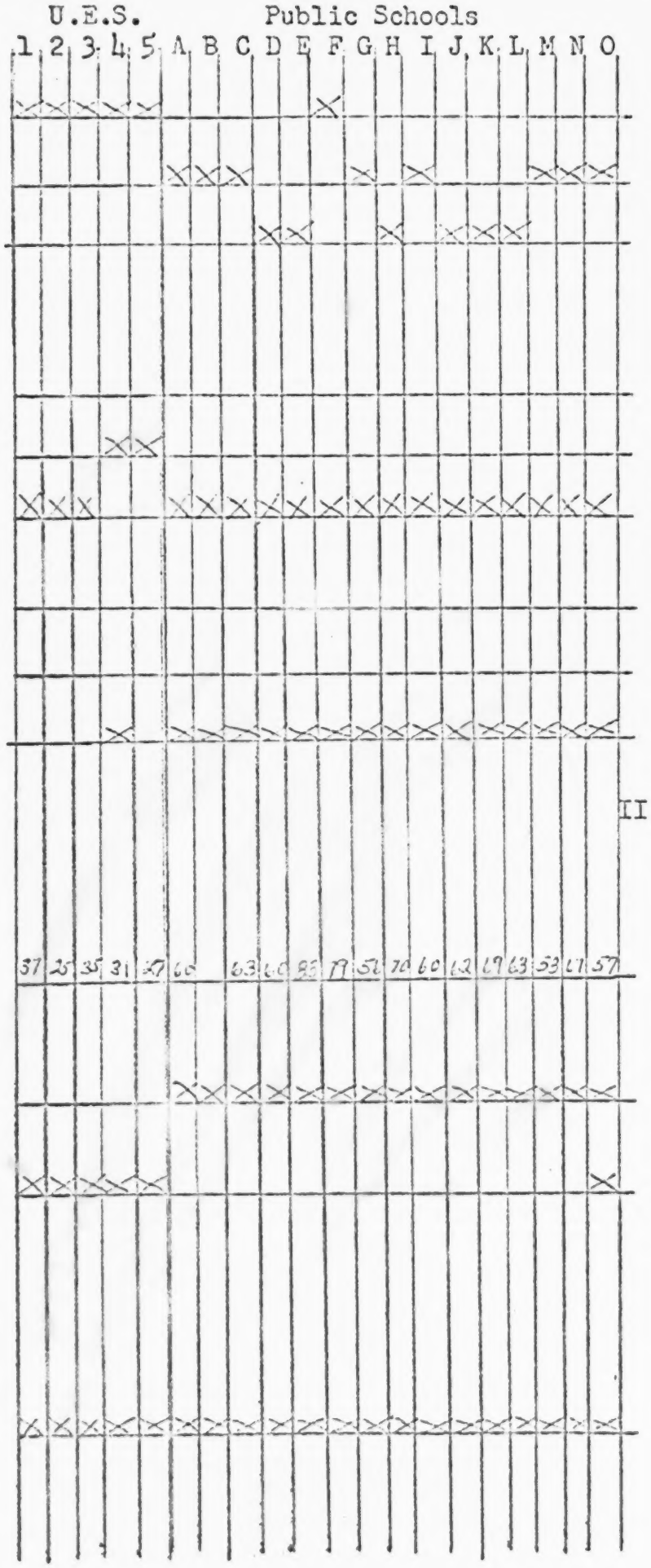
7. Music and Rhythms

Large group instruction
- Heavy emphasis
- Moderate emphasis
- Little or no emphasis

Independent activities
- Heavy emphasis
- Moderate emphasis
- Little or no emphasis

8. Arts and crafts

Large group instruction
- Heavy emphasis
- Moderate emphasis
- Little or no emphasis



Independent activities
- Heavy emphasis
- Moderate emphasis
- Little or no emphasis

9. Health and Safety

Large group instruction
- Heavy emphasis
- Moderate emphasis
- Little or no emphasis

Independent activities
- Heavy emphasis
- Moderate emphasis
- Little or no emphasis

II. Instructional Process

A. Group instruction

1. Percentage of total school time

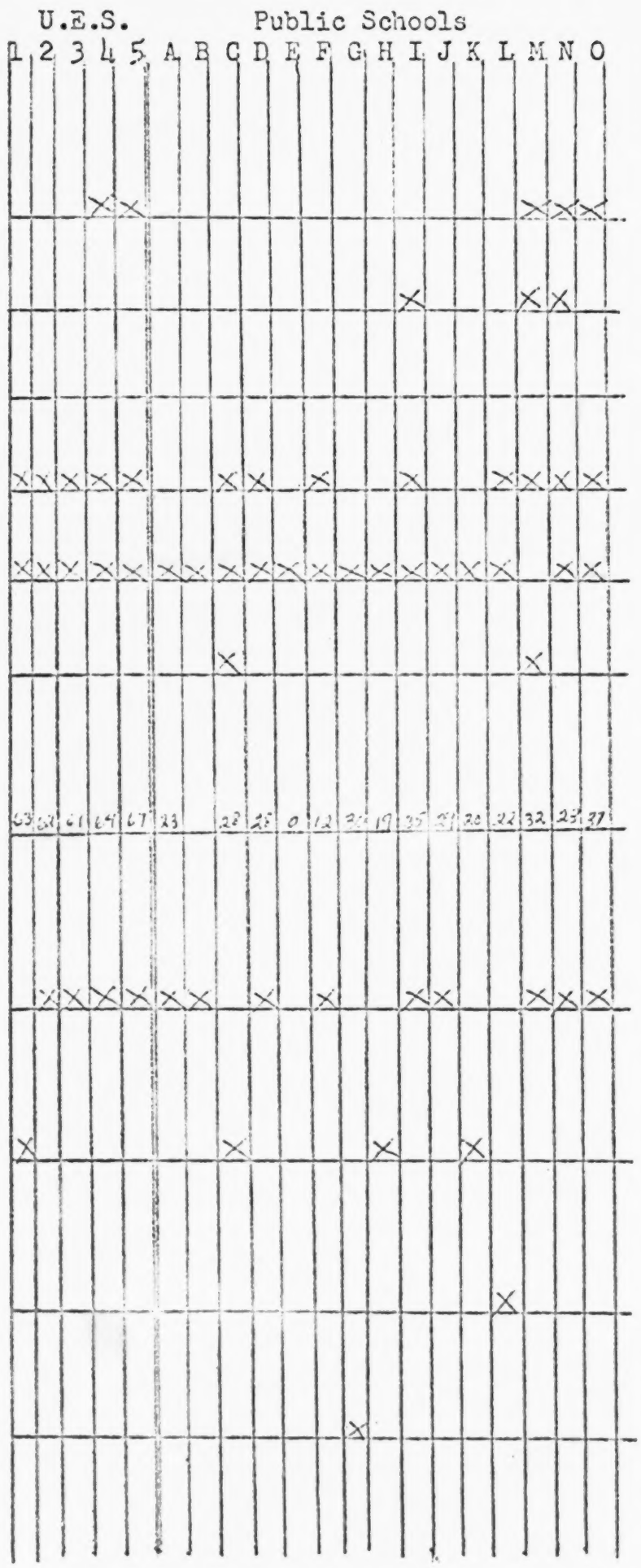
2. Group size

   a. whole class

   b. less than whole class

3. Instructional patterns

   a. teacher talk - presenting instruction, asking closed questions, etc.



b. teacher-child interaction - more than child's answer to closed questions.

c. child-child interaction

d. teacher demonstration

e. child's manipulation of materials

f. teacher's reading to students

g. teacher directed games

B. Independent activities

1. Percentage of total school time

2. Freedom of choice

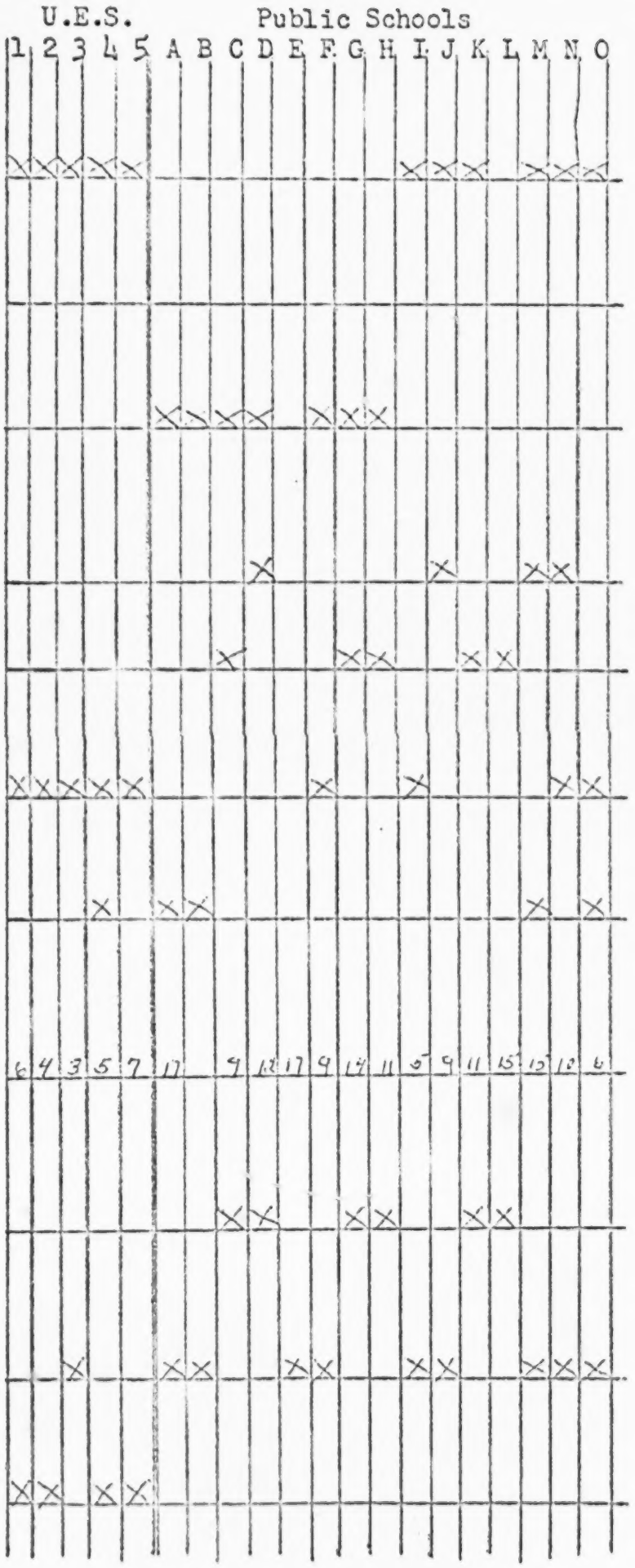
a. student free to choose any activity available

b. student free to choose from a limited number of activities

c. student forced to choose from a limited number of activities

d. student directed to an activity by the teacher.

3. Availability of materials



a. most materials available to the students

b. materials available if requested by the student

c. materials limited to those provided by the teacher.

4. Role of the teacher

a. giving instructions or information

b. directing and limiting

c. facilitating (open questions, support, reinforcement, etc.)

d. observing with little or no participation

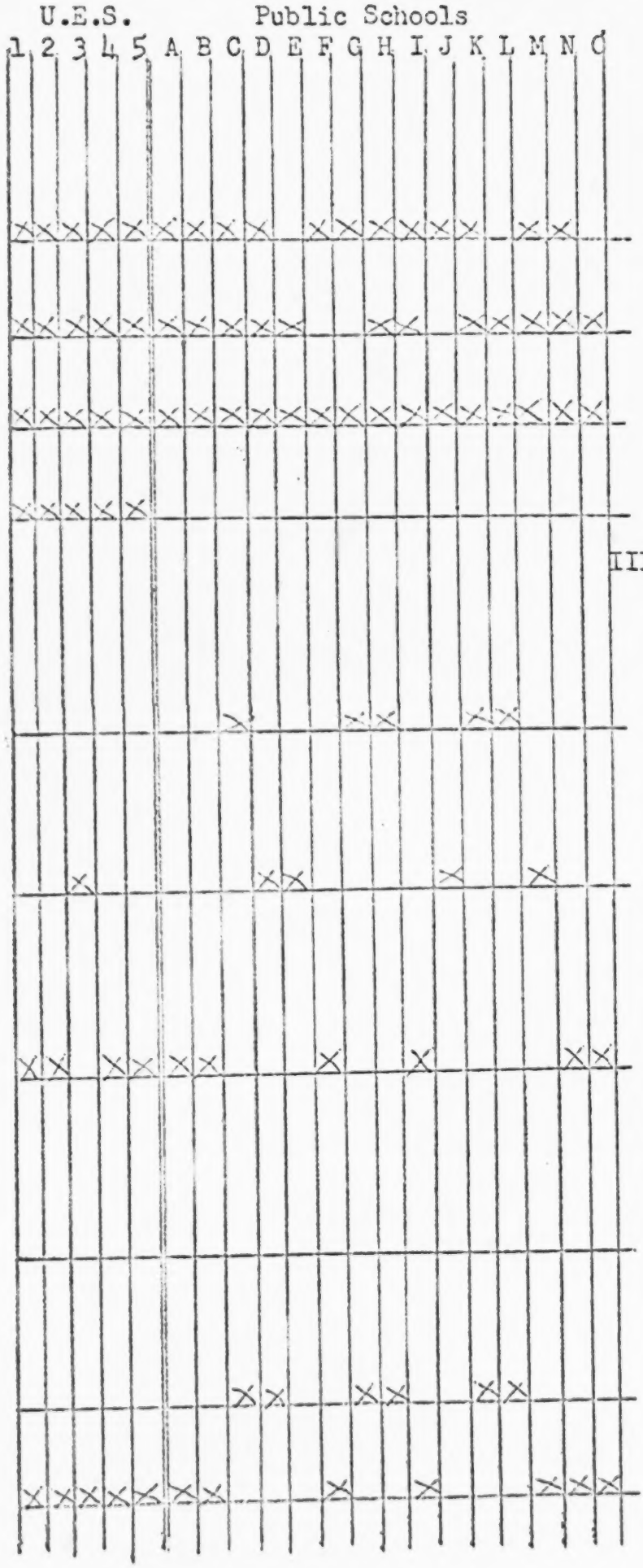
C. Transition and routine

1. Percentage of total school time

2. Tightly structured-formal (forming lines, teacher directed, quiet, etc.)

3. Moderately structured (may form lines, relaxed, teacher and student directed)

4. Loosely structured (student directed, teacher facilitator)



D. Basis for the selection of learning activities

1. School and district publications

2. Teacher's experience and background

3. Availability of materials

4. Other publications, etc.

III. Learning Climate

A. Daily schedule

1. Rigid (same daily or weekly schedule)

2. Moderately rigid (same daily or weekly schedule with changes for special occasions)

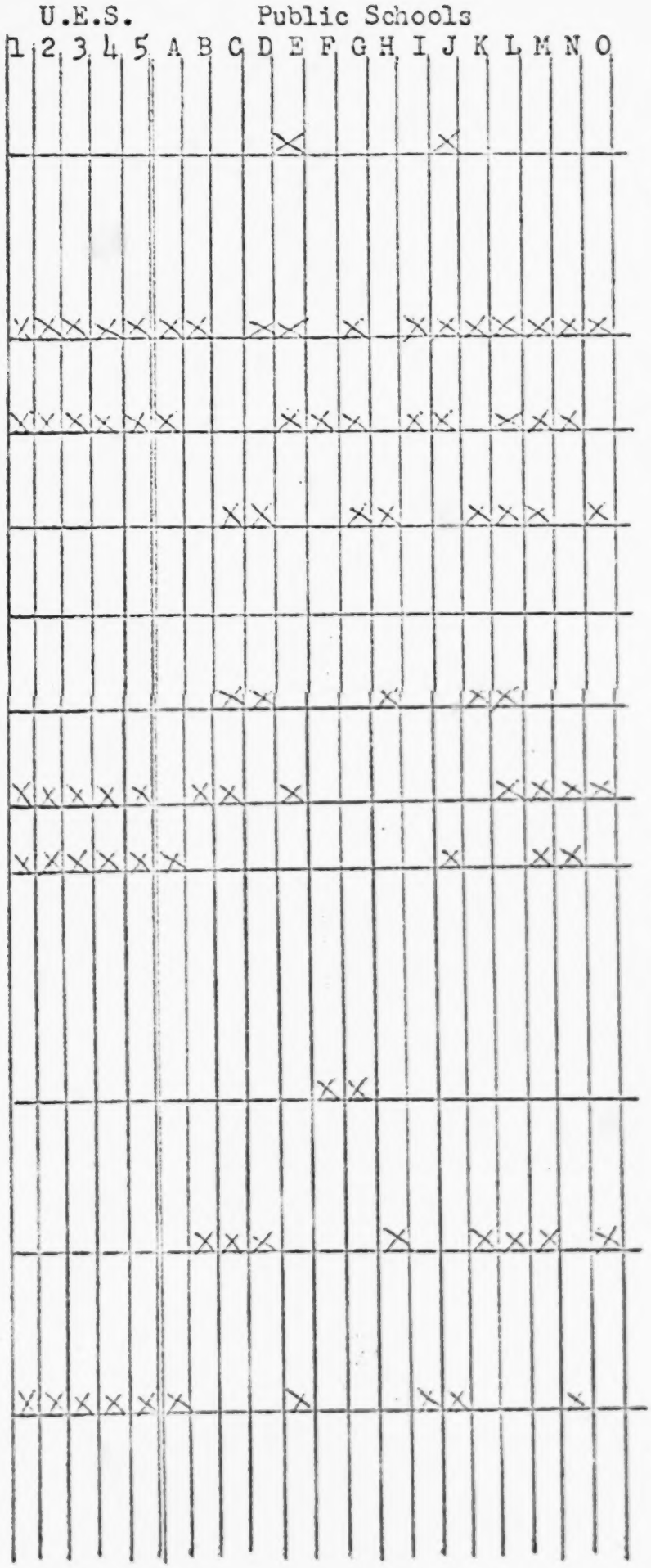
3. Moderately flexible (general daily schedule which is adjusted for instructional needs

4. Flexible - No set daily or weekly schedule (schedule dictated by happenings and feelings)

B. Classroom rules

1. Restrictive (numerous, exclude confrontation)

2. Protective (few, based on safety of children)



3. Permissive (few or no set classroom rules)

C. Techniques utilized for student control

1. Mass positive reinforcement

2. Selective positive reinforcement

3. Mass use of signals (Shh !, Excuse me, etc.)

4. Selective use of signals

5. Mass negative reinforcement

6. Selective negative reinforcement

7. Ignoring the behavior

D. Degree of teacher involvement

1. Low involvement - disorganized, ill prepared, little or no enthusiasm, etc.

2. Moderate involvement - organized, prepared, proceeds routinely, some enthusiasm

3. High involvement - organized and busy, enthusiastic, spontaneous

E. Mannerisms of teachers towards children

1. Positive - accepting, honest, praises

2. Neutral - little or no response to children

3. Negative - punitive, reprimanding, scolding

F. Degree of student involvement

1. Low involvement - flitting, inattention, little or no enthusiasm

2. Moderate involvement - busy with tasks, follows routine, some enthusiasm

3. High involvement - spontaneous, busy, questioning, enthusiastic

G. Pacing of classroom activities

1. Rapid - hurried, inconsistent, children pushed, impatient

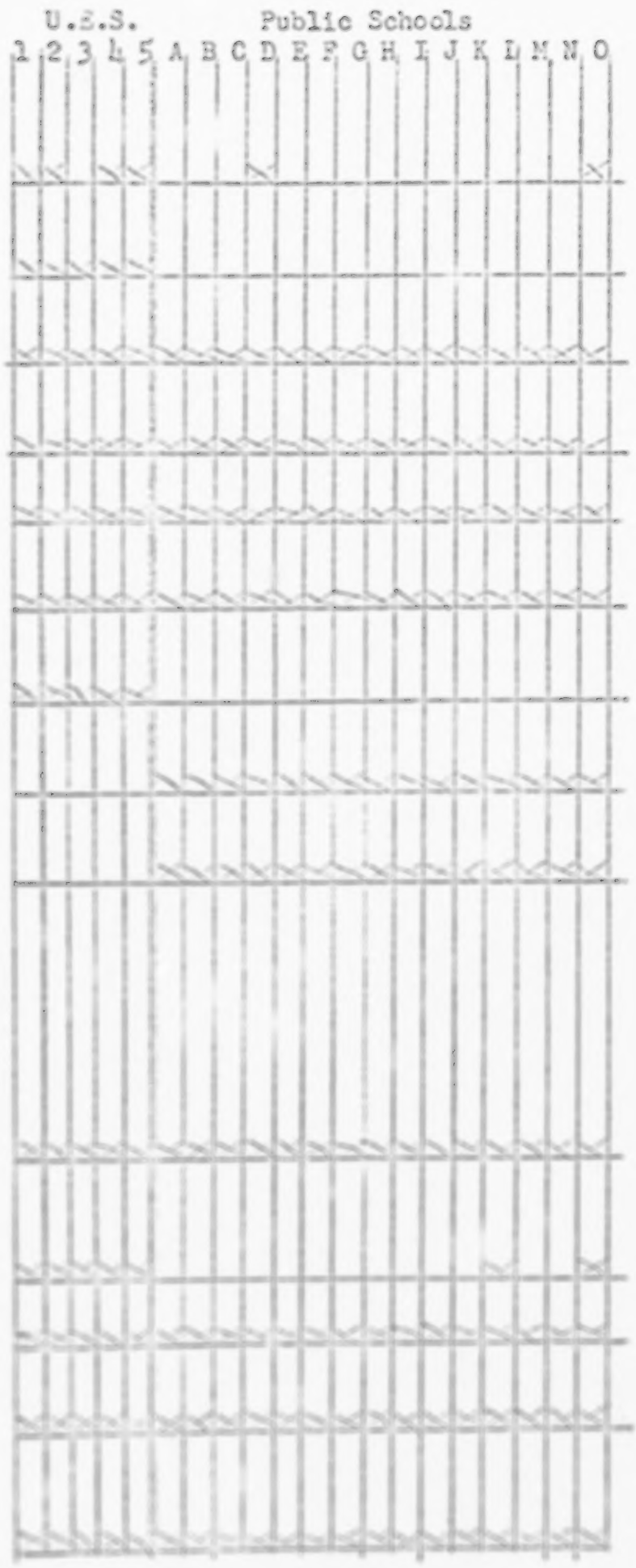
2. Moderate - relaxed, busy, consistent, patient

3. Slow - wasted time, insufficient work, lag between activities

IV. Physical Environment

A. Classroom facilities

1. Standard classroom (Approx. 1000 sq. ft.)



2. More than standard classroom (more than 1000 sq. ft.)

3. Covered patio - work area attached

4. Restroom access from classroom

5. Sink and drinking fountain in classroom

6. Asphalt tile floor

7. Direct access to playground

8. Individual student cupboards in room

9. Group cost area in or attached to room

10. Darkening facilities for windows

B. Standard classroom furniture and equipment (in the room regardless of the activity)

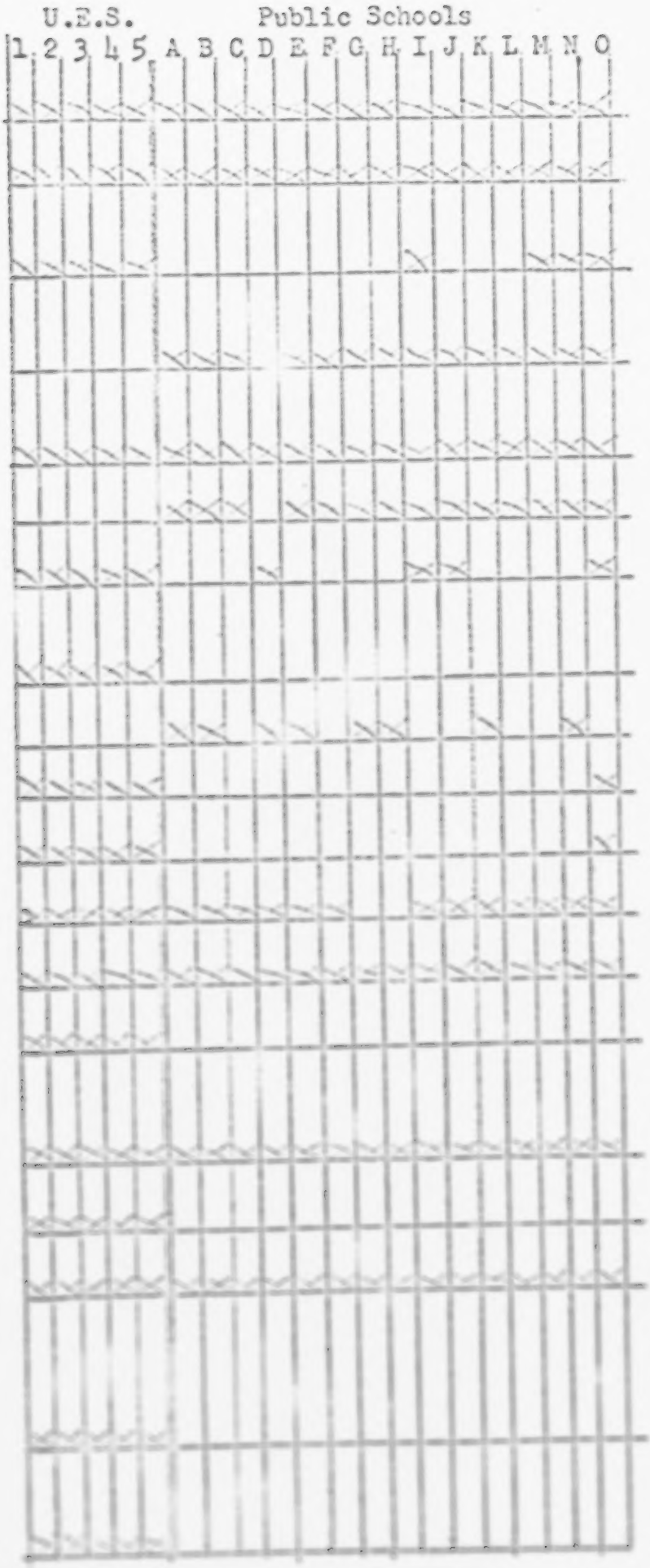
1. Rug or mat area sufficient for all students

2. Table work stations and chairs sufficient for all students

3. Piano

4. Cabinets for art supply storage

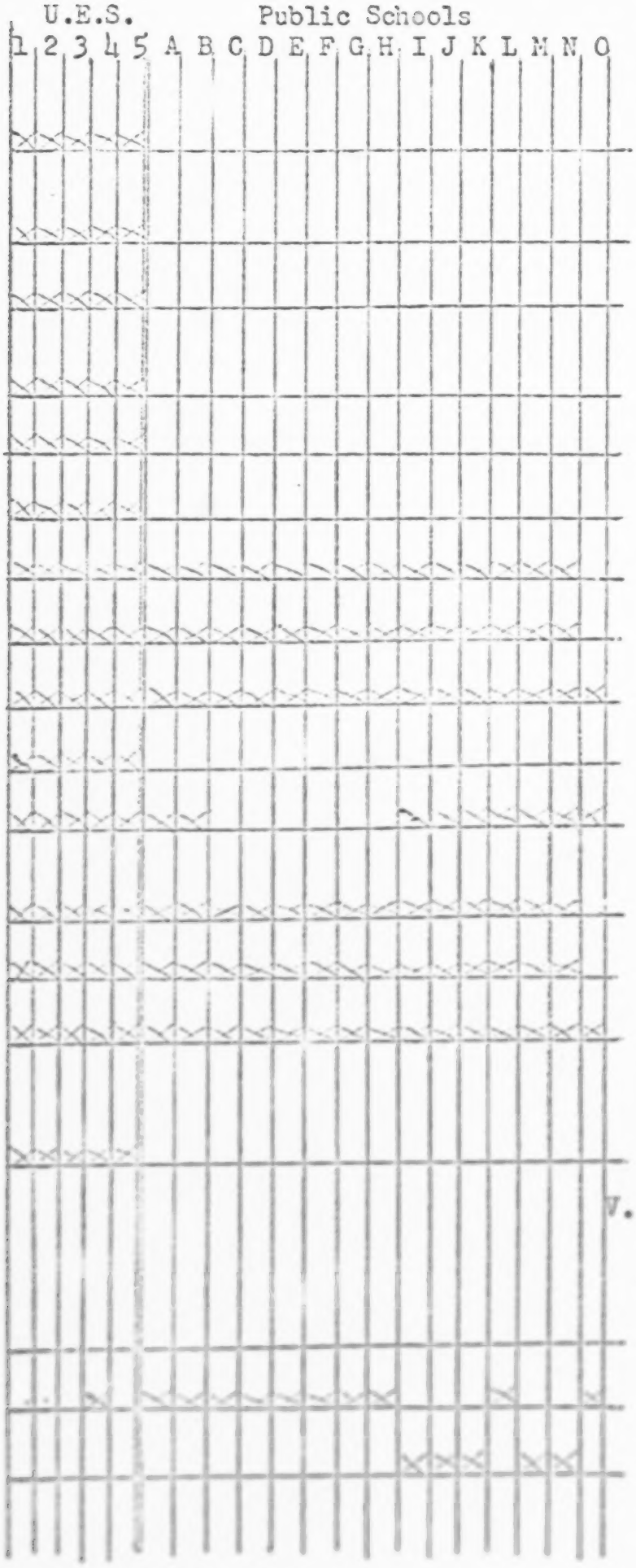
5. Cabinets for block storage



6. Cabinets for books
7. Record player
8. Chalkboard for student use
9. Chalkboard for teacher's use only
10. Bulletin board (at least 4'x12')
11. Projection screen
12. Listening center
13. Typewriter (primary type)
14. Rest mats
15. Easels
16. Clay cart
17. Aquarium
18. Solid floor blocks
19. Hollow building blocks

C. Playground facilities
   1. Sand box area
   2. Grass play area
   3. Paved play area

D. Standard playground equipment
   1. Trees for climbing
   2. Ropes for climbing



3. Large boxes and boards for building

4. Large pipes for climbing, etc.

5. Bike storage cabinets

6. Animal cages and animals

7. Work benches

8. Swings

9. Horizontal bars

10. Horizontal ladder

11. Jungle gym

12. Climbing towers

13. Sand play equipment

14. Hollow block storage and blocks

15. Easels

16. Student work tables

17. Dramatic play equipment (boat, car, playhouse, etc.)

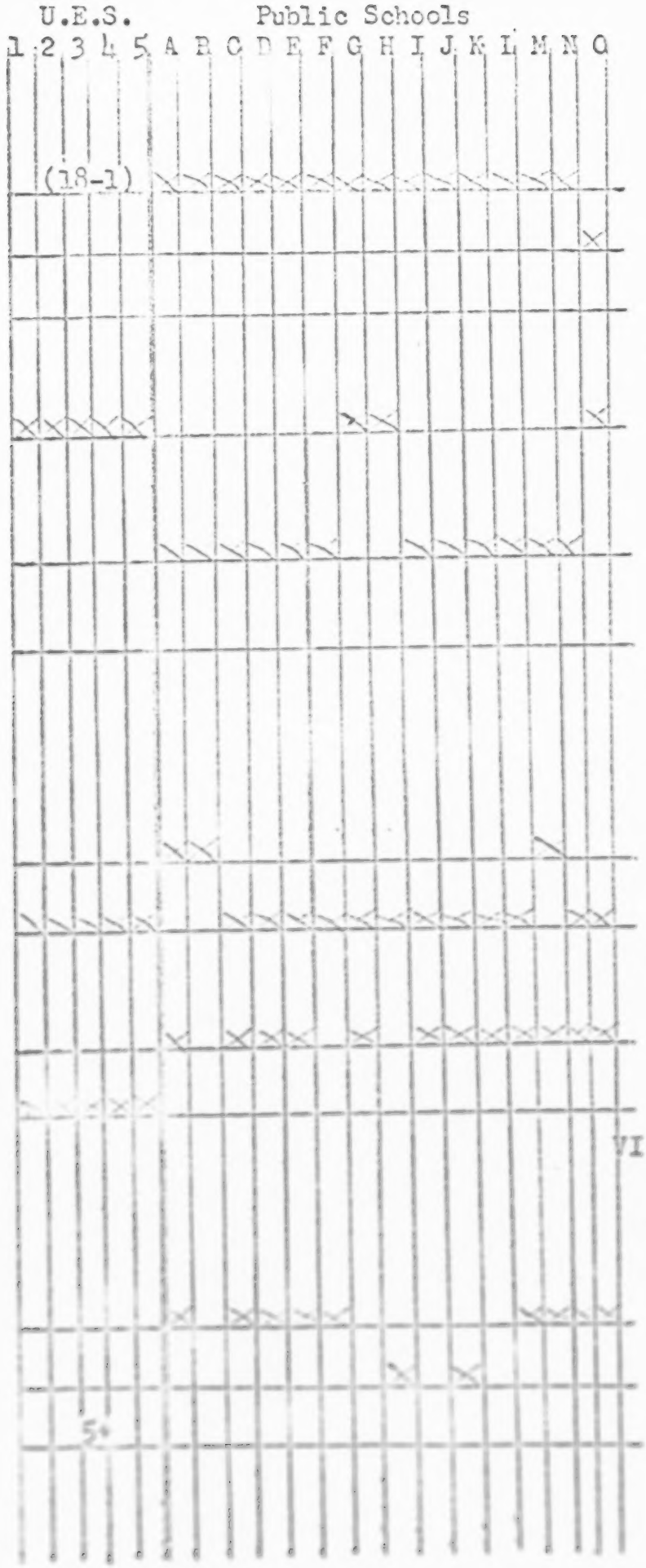
V. Student Population

A. School enrollment

1. Under 450

2. Between 450 and 750

3. Over 750



B. Class size

1. Between 20 and 25

2. Between 25 and 30

3. Over 30

C. Class grouping

1. Heterogeneously

2. Homogeneously by age (younger in morning, older in afternoon)

3. Homogeneously by other criteria

D. Socio-Economic status of school population (as judged by school principal and/or teacher)

1. Middle class

2. Upper-middle

E. Age span of student

1. One year

2. More than 1 year

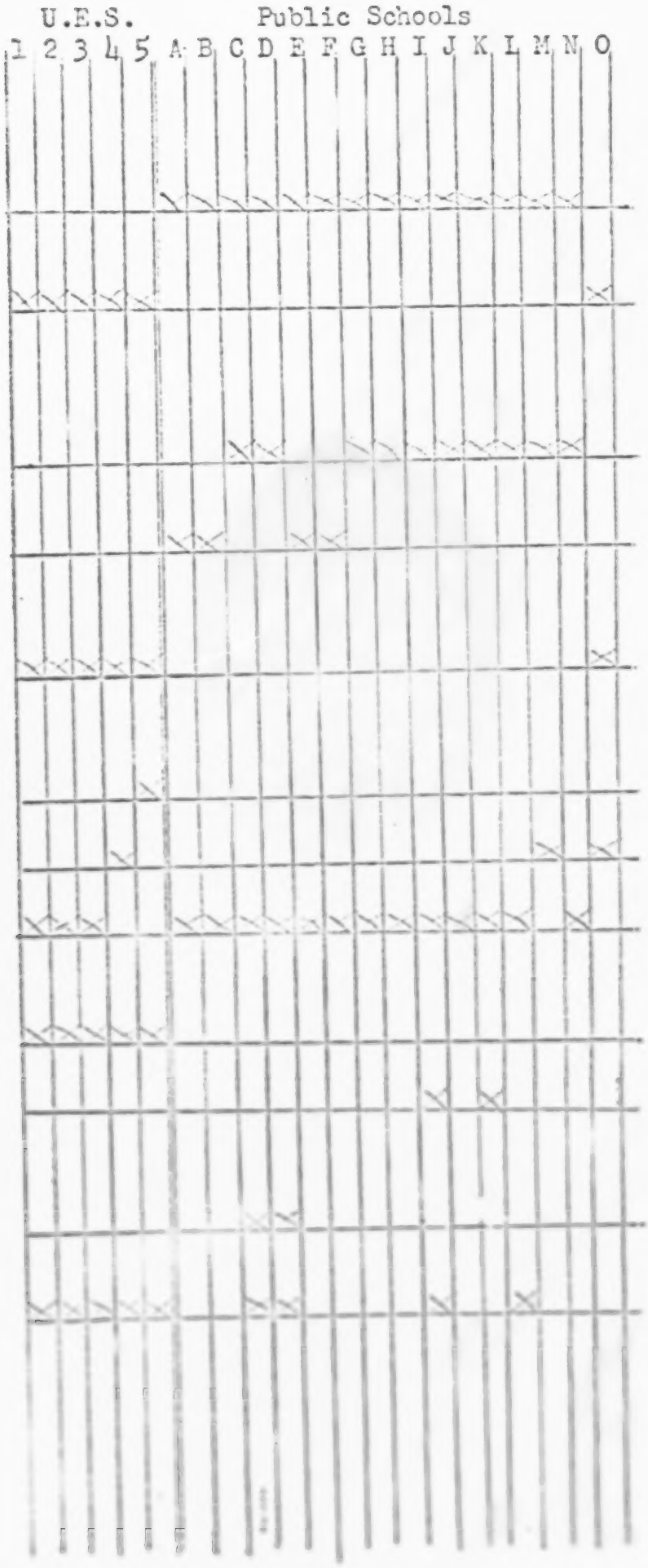
VI. Staffing

A. Number of early childhood or kindergarten teachers

1. Two

2. Three

3. Four



B. Teaching responsibilities

1. Two - 150 minute sessions

2. One - 180 minute session

C. Evidence of cooperative or team teaching

1. No evidence

2. Evidence of cooperative planning

3. Evidence of cooperative and/or team teaching

D. Teacher experience

1. Less than three years

2. Three to seven years

3. Over seven years

E. Para-professional staff

1. One or more aides

2. Volunteer parent aides

F. Trainees

1. Student participants

2. One of more student teachers

APPENDIX IV

STUDENT PERFORMANCE SURVEY

REPORT OF FINDINGS

APPENDIX IV

Self-Related Skil

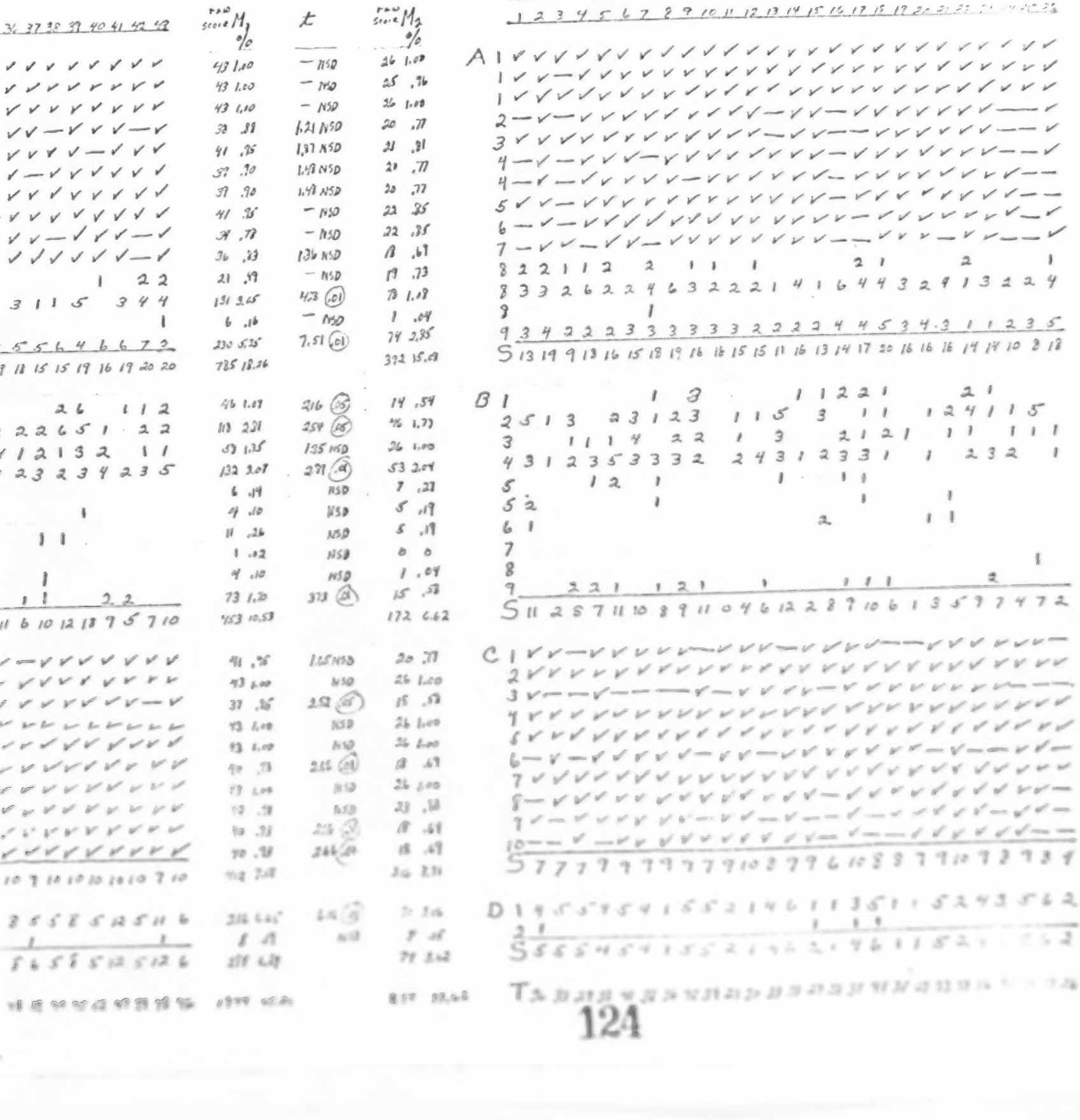
University Elementary School

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	raw score	M	%	t
A	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	43	1.00		— NSD
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	43	1.00		— NSD
	1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	43	1.00		— NSD
	2	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	—	✓	38	.88	1.21	NSD
	3	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	41	.95	1.37	NSD
	4	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	39	.90	1.49	NSD
	4	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	39	.90	1.49	NSD
	5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	41	.95		— NSD
	6	—	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	—	—	✓	✓	✓	—	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	—	✓	✓	✓	39	.72		— NSD
	7	—	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	—	✓	—	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	36	.83	1.36	NSD
	8	1	1		1	1			1													2				2	1	1		2	1			2							1		2	2		21	.39		— NSD
	9	4	3	2	1	5	1	2	4	2	5	3	3	4	2	3	1	2	4	4	2	2	3	3	5	2	3	5	3	4	4	3	6	4	3	3	3	1	1	5		3	4	4				
										1	1											1				1					1												1		131	3.05		423 (EE)
	8																																												6	.16		— NSD
	9	4	6	6	7	5	2	6	7	5	5	7	4	7	4	5	7	3	8	3	2	4	5	3	6	5	4	3	4	4	7	4	9	8	7	7	5	5	6	4	6	6	7	3	230	5.35		7.51 (EE)
	S	16	20	17	18	19	13	18	22	18	20	20	17	19	16	18	18	15	22	14	14	13	17	15	20	18	18	23	16	13	24	14	25	22	22	17	18	15	15	19	16	17	20	20	735	18.26		
B	1	1	1	2	1			1	2	1			1	2	3	1	3		1	1	1	2			1	2	1	1		3		1	1								2	6		1	1	2	46	1.07		216 (EE)
	2	3	3	1	4			1	4	3	4	4	1	6	5	1	2	3	4	2	5	6	5	2	4	5	1	3	2	2		3	1	2	3	3	2	2	6	5	1		2	2	113	2.21		254 (EE)
	3	1	1	1		2	1	3	4	1	3	1	1	2	1				1	1	1	2	2	1	2	1	2	1	1	2	2	1			1	4	1	2	1	3	2		1	1	57	1.35		135 (EE)
	4	1	3	2	3	3	2	4	7	4	5	2	2	2	5	1	2		4	4	3	6	1		4	3	5	5	3	4	3	4		3	4	4	2	3	2	3	4	2	3	5	132	3.07		297 (EE)
	5					1	1				1						1				2																									6	.14		NSD
	5						1		1																						1										1					4	.10		NSD
	6	1		1				1		1										1			1				1	1	1										1	1						11	.26		NSD
	7																										1																			1	.02		NSD
	7																										1																			4	.10		NSD
	9	1	1	3	2	2	6	2	1	5	2	2		4	4	3	2	1	3	2	1	1	2		2	3	3	3	1	1		2		2		1	1			2	2					73	1.70		373 (EE)
	S	3	8	7	10	10	9	11	12	19	15	15	9	5	17	18	6	10	4	13	11	13	17	11	3	13	14	15	14	3	13	5	11	2	5	10	11	6	10	12	18	7	5	7	10	453	10.53		
	1	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	41	.95		165 NSD
	2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	43	1.00		NSD
	3	✓	✓	✓	—	✓	✓	✓	✓	✓	—	—	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	37	.85		252
	4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	43	1.00		NSD
	5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	43	1.00		NSD
	6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40	.93		215
	7	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	43	1.00		
	8	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	42	.98		
	9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	42	.98		215
	10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	42	.98		244
	S																																												418	9.58		
D	1	6	10	8	10	10	8	11	12	19	15	15	9	5	17	18	6	10	4	13	11	13	17	11	3	13	14	15	14	3	13	5	11	2	5	10	11	6	10	12	18	7	5	7	10	226	4.65		1.16
	2																																												8	.19		
	S	6	10	8	10	10	8	11	12	19	15	15	9	5	17	18	6	10	4	13	11	13	17	11	3	13	14	15	14	3	13	5	11	2	5	10	11	6	10	12	18	7	5	7	10	234	4.84		
T																																																

APPENDIX IV

elf-Related Skills

Public Schools



APPENDIx IV

Reading Readiness Skills

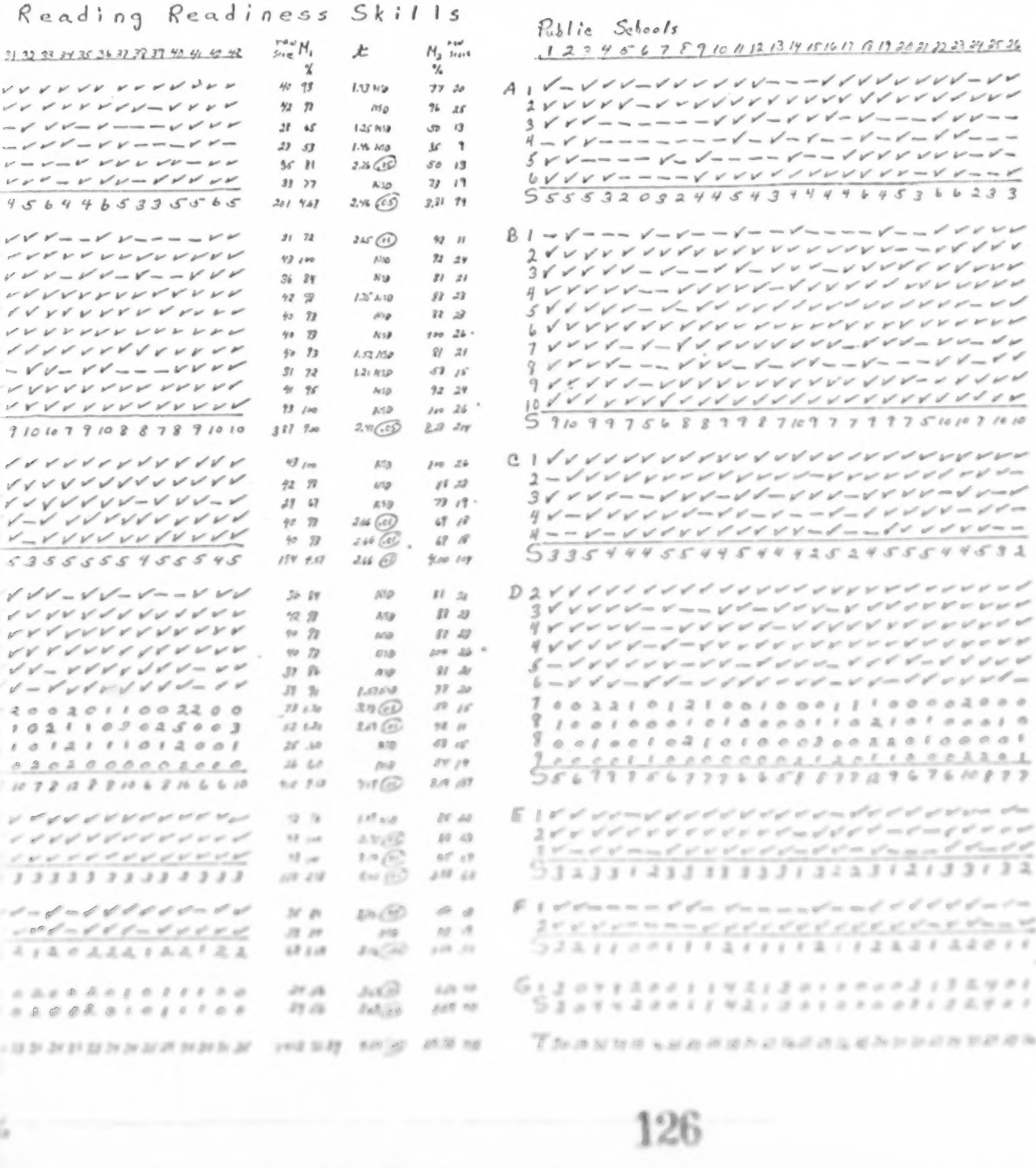
University Elementary School

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	raw score	M_1 %	t	M_2 %	raw score
A 1	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	—	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40	95	1.30 NS	77	20
2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	42	77	.95	96	25
3	✓	✓	✓	✓	—	—	✓	✓	—	✓	✓	✓	—	—	✓	✓	—	✓	✓	—	✓	✓	—	✓	✓	—	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	28	65	1.25 NS	50	13
4	✓	✓	✓	✓	—	—	✓	—	—	✓	✓	—	—	✓	—	—	✓	—	✓	✓	—	✓	✓	—	✓	✓	—	✓	—	✓	—	—	✓	✓	—	✓	✓	—	—	—	✓	✓	—	23	53	1.96 NS	35	9
5	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	—	✓	✓	✓	✓	—	✓	✓	✓	✓	—	✓	✓	✓	✓	—	✓	✓	—	—	✓	✓	✓	✓	—	✓	✓	36	81	2.26 (.05)	50	13
6	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	—	✓	✓	—	—	—	—	—	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	—	✓	✓	✓	✓	—	✓	✓	—	✓	✓	✓	✓	33	77	NS	73	19
S	6	6	6	6	4	2	6	5	3	6	6	2	4	4	6	3	2	5	5	3	6	3	6	6	6	5	6	2	6	4	4	5	6	4	4	6	5	3	3	5	5	6	5	241	4.61	2.96 (.05)	3.31	99
B 1	✓	✓	✓	✓	✓	—	✓	✓	—	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	—	✓	✓	—	—	✓	✓	—	—	—	✓	21	72	2.45 (.01)	42	11
2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	43	100	NS	72	29
3	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	—	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	36	84	NS	81	21
4	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	42	98	1.35 NS	88	23
5	—	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	42	98	NS	88	23
6	—	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40	93	NS	100	26
7	✓	✓	✓	✓	—	✓	✓	✓	✓	—	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40	93	1.52 NS	81	21
8	✓	✓	✓	✓	—	✓	✓	—	✓	—	—	✓	✓	—	✓	✓	—	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	—	✓	✓	—	✓	✓	—	✓	✓	—	—	—	✓	✓	✓	31	72	1.21 NS	58	15
9	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	—	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	41	95	NS	92	24
10	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	43	100	NS	100	26
S	8	10	10	10	10	7	10	9	8	6	9	8	8	8	9	10	7	10	10	8	9	10	10	10	10	10	10	10	9	9	9	10	10	7	9	10	8	8	7	8	9	10	10	381	9.00	2.41 (.05)	2.23	214
C 1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	43	100	NS	100	26
2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	42	98	NS	88	23
3	—	✓	✓	✓	—	✓	✓	✓	—	✓	✓	—	—	—	✓	✓	—	—	—	✓	✓	—	✓	✓	—	✓	✓	—	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	28	67	NS	73	19
4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	42	98	2.46 (.01)	69	18
4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40	93	2.44 (.01)	69	18
S	4	5	5	5	4	4	5	5	5	4	4	5	4	4	4	3	5	4	4	4	5	5	4	5	5	4	5	3	5	5	5	3	5	5	5	5	4	5	5	5	4	5	174	9.57	2.46 (.01)	4.00	149
D 2	✓	✓	✓	✓	✓	✓	—	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	—	✓	✓	—	✓	✓	36	84	NS	81	21
3	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	42	98	NS	88	23
4	—	✓	✓	—	✓	✓	✓	—	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40	93	NS	88	23
4	—	✓	✓	—	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	40	93	NS	100	26
5	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	—	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	37	86	NS	81	21
6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	33	76	1.57 NS	77	20
7	1	1	3	2	2	2	6	2	1	5	2	2	0	4	4	3	2	1	3	2	1	1	2	0	2	3	3	3	1	1	0	2	0	0	2	0	1	1	0	0	2	2	0	0	77	1.79	3.79 (.01)	58	15
8	0	2	2	1	2	0	2	0	1	1	1	2	0	0	0	1	1	2	2	1	3	0	1	3	2	1	1	1	0	1	1	0	2	1	1	1	0	3	2	0	2	5	0	0	3	52	1.21	2.69 (.01)	42	11
8	0	0	0	2	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	1	2	0	1	0	0	3	1	1	1	0	1	2	1	1	1	0	1	2	0	0	1					25	.58	NS	58	15
9	1	0	0	0	1	0	0	0	0	1	0	0	0	1	1	0	2	0	1	1	1	0	0	3	0	0	2	2	3	1	0	2	0	2	0	0	0	0	0	2	0	0					26	60	NS	54	14
S	6	7	11	11	12	12	7	6	12	7	7	7	10	7	7	7	8	11	7	11	7	7	7	14	12	7	12	13	10	7	10	7	7	12	8	7	8	10	6	8	16	6	6	10						
E 1	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	12	76	1.69 NS	27	22
2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	33	100	2.37 (.01)	88	23
3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	33	100	3.19 (.01)	65	17
S	3	3	3	3	3	2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	109	2.18	5.42 (.01)	2.33	82
F 1	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	—	✓	✓	✓	✓	—	✓	✓	✓	✓	—	✓	✓	✓	✓	—	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	—	✓	25	61	3.24 (.01)	69	18
2	✓	✓	✓	✓	✓	—	✓	✓	✓	✓	✓	—	✓	✓	—	—	—	—	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	33	80	NS	73	19
S	2	2	2	2	2	0	2	2	2	2	2	0	2	2	2	1	0	1	1	2	1	2	2	2	2	1	2	0	2	2	2	1	2	2	2	1	2	2	2	1	2	2	58	2.76	3.46 (.01)	2.69	211
G 1	1	0	1	1	0	0	2	0	0	1	1	2	0	0	1	0	0	0	2	1	1	0	0	1	1	1	0	0	2	0	0	2	0	1	0	1	1	1	0	0						29	.69	3.45 (.01)	2.19	49
S	1	0	1	1	0	0	2	0	0	1	1	2	0	0	1	0	0	0	2	1	1	0	0	1	1	1	0	0	2	0	0	2	0	1	0	1	1	1	0	0						29	.69	3.45 (.01)	2.19	49
T																																																

APPENDIx IV

Reading Readiness Skills

Public Schools



Social Skills

University Elementary School

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	No	M_1 %	$\bar{x}$
A	1	4	3	2	3	3	5	1	5	2	4	1	1	3	2	4	2	3	2	1	5	5	1	3	3	3	1	5	5	4	3	3	2	3	5	4	2	4	3	3	3	3	4	3	131	3.45	2.41
	2	1	1	2	1			1	2	1			1	2	3	1	3		1	1	1	2			1	2	1	1		3		1	1							2	6		1	1	2	28	1.07	2.6
	3	4	3	1	5			4	3	1	2	1	4	2	3	1	1	3		2	3	1	2	1	5	1	2	1		1	2		1	1	3			2	2	1	3	3	1	1	77	1.77	2.8
	4	3	5	1	4			1	4	3	4	4	1	6	5	1	3	3	4	2	5	6	5	2	4	5	1	3	2	2		3	1	2	3	3	2	2	6	5	1		2	2	121	2.31	2.57
	5					1	2	2		1	1		1	1											1	1									1										12	.28	
	6	1	3	2	3	3	2	4		7	4	5	2	2	2	5	1	2		4	4	3	6	1		4	3	5	5	3	4	3	4		3	4	4	2	3	2	3	4	2	3	5	132	3.40	2.57
	7					1	1				1					1				2																									6	.07	
	7					1	1																							1										1				9	.10	
	8	1		1				1		1										1		1				1	1	1										1	1						11	.24	
	9	1		1	1	2		1	2	1	1	3	2		1	1	1		1	3	1	1	3	1	1	1	4		1	3	1		2	2	1	1		2	2	2	2	2	2	57	1.33	2.42
	9	1	1		1	1			1										2					2	1	1		2	1			2								1		2	2	21	.39	
	9	4	3	2	1	5	1	2	4	2	5	3	3	4	2	3	1	2	4	4	2	2	3	3	5	2	3	5	3	4	4	3	6	4	3	3	3	1	1	6		3	4	4	131	3.05	2.43
	9	3	2	3	5	2	1	1	6	3	1	2	3	2	5	4	5	2	1		3	2	4	4	4	4	3	4	1		4	3	4	2	7	5	1	3	3	4	4	5	2	2	143	3.30	2.64
	11	2	1	2	1	1	2	2	1	3	2	1		6	4	2	3	1	2		1		1	5	1	1	2	3			5	2	1	2	2	1	1	1	2	2		2	6	2	77	2.69	2.46
	11	–	✓	–	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	–	✓	✓	✓	✓	–	✓	—	✓	✓	✓	✓	–	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	36	.89	2.47
	12	1	1	1		2	1	3	4	1	3	1	1	2	1				1	1	1	2	2	1	2	1	2	1	1	2	2	1		1	4	1	2	1	3	2		1	1	93	2.34	2.32
	S	24	27	17	22	21	14	20	19	25	23	21	16	33	32	21	22	15	23	16	22	32	22	23	26	29	26	32	20	25	16	23	18	20	24	29	13	22	26	24	21	22	23	27	1193	29.98	2.54
B	1				1	1			1					1					2																										6	.19	
	1				1	1																								1											1			9	.30	
	2																									1																			3	.08	
	3				1									1												1												1							9	.28	
	4	1	1	3	2	2	6	2	1	5	2	2		4	4	3	2	1	3	2	1	1	2		2	3	3	3	1	1		3		2		1	1			2	2				93	2.96	3.18
	5	1		1	1	1	2			3	1	2		1	2	2	1	1	3	1	1		1		1	1	1		1	1		1						1			1	2			35	.91	3.46
	6	1		1				1			1	1		2		1	1	1		3		2	2	2	1		2		1		2	2								2				26	.68	
	7	1	4	3	4	5	4	5	3	3	4		6	4	5	2	1	3	3	2	1	4	3	1	2	5	3	3	1	1	1	5		1	1	1	6	3			3	3	3		99	2.58	3.01
	S	6	2	8	7	7	15	6	7	12	8	7	8	0	13	11	10	8	3	10	6	6	5	6	4	5	7	14	8	5	5	1	10	0	3	5	1	7	6	4	3	0	7		264	6.87	3.07
C	1	4	3	2	3	3	5	1	5	2	4	1	1	3	2	4	2	3	2	1	5	5	1	3	3	3	1	5	5	4	3	3	2	3	5	4	2	4	3	3	3	3	4	3	131	3.45	2.41
	2	1	1	2	1			1	2	1			1	2	3	1	3		1	1	1	2			1	2	1	1		3		1	1							2	6		1	1	2	28	1.07	2.6
	3	4	3	1	5			4	3	1	2	1	4	2	3	1	1	3		2	3	1	2	1	5	1	2	1		1	2		1	1	3			2	2	1	3	3	1	1	77	1.77	2.8
	4	3	5	1	4			1	4	3	4	4	1	6	5	1	3	3	4	2	5	6	5	2	4	5	1	3	2	2		3	1	2	3	3	2	2	6	5	1		2	2	121	2.31	2.57
	5					1	2	2		1	1		1	1											1	1									1										12	.28	
	6	1	3	2	3	3	2	4		7	4	5	2	2	2	5	1	2		4	4	3	6	1		4	3	5	5	3	4	3	4		3	4	4	2	3	2	3	4	2	3	5	132	3.40	2.57
	7					1	1				1					1				2																									6	.07	
	7					1	1																							1										1				9	.10	
	8	1		1				1		1										1		1				1	1	1										1	1						11	.24	
	9	1		1	1	2		1	2	1	1	3	2		1	1	1		1	3	1	1	3	1	1	1	4		1	3	1		2	2	1	1		2	2	2	2	2	2	57	1.33	2.42
	9	1	1		1	1			1										2					2	1	1		2	1			2								1		2	2	21	.39	
	9	4	3	2	1	5	1	2	4	2	5	3	3	4	2	3	1	2	4	4	2	2	3	3	5	2	3	5	3	4	4	3	6	4	3	3	3	1	1	6		3	4	4	131	3.05	2.43
	9	3	2	3	5	2	1	1	6	3	1	2	3	2	5	4	5	2	1		3	2	4	4	4	4	3	4	1		4	3	4	2	7	5	1	3	3	4	4	5	2	2	143	3.30	2.64
	11	2	1	2	1	1	2	2	1	3	2	1		6	4	2	3	1	2		1		1	5	1	1	2	3			5	2	1	2	2	1	1	1	2	2		2	6	2	77	2.69	2.46
	11	–	✓	–	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	–	✓	✓	✓	✓	–	✓	—	✓	✓	✓	✓	–	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	—	✓	36	.89	2.47
	12	1	1	1		2	1	3	4	1	3	1	1	2	1				1	1	1	2	2	1	2	1	2	1	1	2	2	1		1	4	1	2	1	3	2		1	1	93	2.34	2.32
	S	24	27	17	22	21	14	20	19	25	23	21	16	33	32	21	22	15	23	16	22	32	22	23	26	29	26	32	20	25	16	23	18	20	24	29	13	22	26	24	21	22	23	27	1193	29.98	2.54
T																																															

127

APPENDIX [illegible]

Social Skills

Public Schools

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	raw score	M_1 %	t	M_2 %	raw score
A	1	6	4	6	2	6	4	3	3	2	7	1	6	9	1	3	6	4	5	3	4	8	2	1	4	4	2																					
	2						1		3					1	1	2	2	1					2	1																									
	3		1		2	2	1	1		2	2	1	2	1	2	2	1		2	2	3		1	2																									
	4	5	1	3		2	3	1	2	3		1	1	5		3		1	1		1	2	4	1	1	5																							
	5				2											1					1				1	3																							
	6	3	1	2	3	5	3	3	3	2		2	4	3	1	2	3	3	1		1		2	3	2		1																							
	7				1	2		1						1			1	1																															
	7	2						1										1			1																											
	8	1													2					1	1																											
	9	2	5	3	1	2	2	2	2	3	1	3	2		1	2	3	2	1	4	2	1	2	2	2	1																							
	9	2	2	1	1	2		2		1	1		1				2	1			2					1																							
	9	3	3	2	6	2	2	4	6	3	2	2	2	1	4	1	6	4	4	3	2	4	1	3	2	2	4																							
	9	1	2	2		1			1			1	1	1	1	2			2	2	1		1	2			2	2																							
	11		2		1		1	1				3	1			1	2		1	1	1	1		1			2																							
	11	–	✓	–	✓	✓	✓	–	✓	✓	✓	✓	✓	✓	✓	✓	–	–	✓	✓	✓	–	✓	✓	–	–	✓																							
	12			1	1	1	4		2	2		1		3			2	1	2	1		1	1			1	1	1																							
S	25	21	20	17	26	22	20	21	20	15	17	20	26	11	18	26	25	21	13	13	24	18	14	15	17	15																							
B	1			1	2		1					1			1	1																																	
	1	2					1									1			1																													
	2																																															
	3																																															
	4		2	2	1		1	2	1			1				1	1	1				2																											
	5			1													1	1				1			1																							
	6				1	1							2	1	2		1	1				2	2		1																							
	7			3				3				2			2		1					2	1		1																							
S	2	0	2	7	4	1	3	5	1	0	0	1	3	2	1	6	4	4	1	0	1	0	7	3	1	3																							
C	1	6	4	5	2	6	4	3	3	2	7	1	6	9	1	3	6	4	5	3	4	8	2	1	4	4	2																							
	2		1		2	2	1	1		2	2	1	2	1	2	2	1		2	2	3		1	2																							
	3	5	1	3		2	3	1	2	3		1	1	5		3		1	1		1	2	4	1	1	5																							
	4			2												1					1				1	3																							
	5	3	1	2	3	5	3	3	3	2		2	4	3	1	2	3	3	1		1		2	3	2		1																							
	6	1													2					1	1																											
	8	1	2	2		1			1		1	1	1	2			2	2	1		1	2			2	2																							
	9	3		1				1		1							1				1																											
	10		2		1		1	1			3	1			1	2		1	1	1	1		1			2																							
	11								1																																								
	12						1																																									
	13		1			1		2	1		1			3			2	2		1																											
	14	2	5	3	1	2	2	2	2	3	1	3	2		1	2	3	2	1	4	2	1	2	2	2	1																							
	14	2	2	1	1	2		2		1	1		1				2	1			2					1																							
	14	3	3	2	6	2	2	4	6	3	2	2	2	1	4	1	6	4	4	3	2	4	1	3	2	2	4																							
	15		1	1	1	4		2	2		1		3			2	1	2	1		1	1			1	1	1																							
S	26	20	22	17	23	21	19	23	18	14	17	19	24	9	19	23	22	21	14	17	25	15	12	15	19	15																							
T	53	41	44	43	53	45	43	49	31	29	34	40	53	22	38	55	61	46	23	35	50	33	33	33	39	33																							

	raw score	M_1 %	t	M_2 %	raw score
	131	3.05	2.41 (.05)	4.04	105
	46	1.07	2.8 (.05)	.58	14
	77	1.79	2.13 (.05)	1.15	30
	121	2.81	2.54 (.05)	1.77	46
	12	.28	NSD	.31	8
	132	3.07	2.89 (.01)	2.04	53
	6	.14	NSD	.27	7
	4	.10	NSD	.19	5
	11	.26	NSD	.19	5
	59	1.37	2.42 (.05)	1.96	51
	21	.49	NSD	.73	19
	131	3.05	4.28 (.01)	1.03	76
	129	3.00	6.06 (.01)	1.00	26
	79	1.84	3.68 (.01)	.73	19
	36	.84	1.47 NSD	.69	18
	58	1.35	1.35 NSD	1.00	26
	1053	24.47	3.56 (.01)	19.53	529
	6	.14	NSD	.27	7
	4	.10	NSD	.19	5
	1	.02	NSD	0	0
	4	.10	NSD	.04	1
	73	1.70	3.38 (.01)	.58	15
	35	.81	3.65 (.01)	.19	5
	26	.60	NSD	.54	14
	111	2.58	5.41 (.01)	.58	15
	260	6.05	9.59 (.01)	2.38	62
	131	3.05	2.41 (.05)	4.04	105
	77	1.79	2.13 (.05)	1.15	30
	119	2.81	2.54 (.05)	1.77	46
	12	.28	NSD	.31	8
	132	3.07	2.89 (.01)	2.04	53
	11	.26	NSD	.19	5
	129	3.00	6.01 (.01)	1.00	26
	7	.16	NSD	.35	8
	79	1.84	3.68 (.01)	.23	19
	16	.37	NSD	.04	1
	7	.16	NSD	.04	1
	25	.60	NSD	.58	15
	59	1.37	2.42 (.05)	1.96	51
	21	.49	NSD	.73	19
	131	3.05	4.28 .01	1.03	78
	58	1.35	NSD	1.00	26
	1014	23.58	3.61 .01	18.35	490
	2327	54.12	1.79 (.01)	40.81	1061

128